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Ongoing Implementation Agreements for Open Systems Interconnection Protocols

Volume 1: Stable Virtual Terminal & Document Architecture and Interchange Format

Based on the Proceedings of the
NBS/OSI Implementor's Workshop
Plenary Assembly Held May 6, 1988
National Bureau of Standards
Gaithersburg, MD 20899

Robert Rosenthal, Editor

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
Institute for Computer Sciences and Technology
Gaithersburg, MD 20899

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DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

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National Bureau of Standards
Gaithersburg, Maryland 20899

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**ONGOING IMPLEMENTATION AGREEMENTS
FOR OPEN SYSTEMS INTERCONNECTION
PROTOCOLS
VOLUME 1:
STABLE VIRTUAL TERMINAL & DOCUMENT
ARCHITECTURE AND INTERCHANGE FORMAT**

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U.S. DEPARTMENT OF COMMERCE, C. William Verity, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

Table of Contents

1.	ISO VIRTUAL TERMINAL PROTOCOL	1
1.1	INTRODUCTION	1
1.2	SCOPE AND FIELD OF APPLICATION	1
1.3	STATUS	1
1.4	ERRATA	2
1.5	CONFORMANCE	2
1.6	PROTOCOL	4
1.6.1	Protocol Elements	4
1.6.2	Mapping of Protocol Elements	4
1.6.3	Protocol Data Unit Structure	4
1.7	TELNET PROFILE	4
1.8	TRANSPARENT PROFILE	10
1.9	APPENDIX A	12
1.9.1	Specific ASE Requirement	12
2.	OFFICE DOCUMENT ARCHITECTURE AND INTERCHANGE FORMAT	1
2.1	PART I - DOCUMENT ARCHITECTURE AND INTERCHANGE FORMAT	1
2.1.1	Introduction	1
2.1.2	Primary References	1
2.1.3	Additional References	2
2.1.4	Scope and Field of Application	4
2.1.5	Status	4
2.1.6	Errata	5
2.1.7	Conformance	5
2.2	PART II - NBS DOCUMENT APPLICATION PROFILE	7
2.2.1	Characteristics Supported by this DAP	7
2.2.1.1	Logical characteristics	7
2.2.1.2	Layout characteristics	10
2.2.1.3	Content Characteristics	19
2.2.2	Technical Specification	19
2.2.2.1	Summary of Technical Specification	19
2.2.3	Logical Structure	36
2.2.4	Layout Structure	57
2.2.5	Content-Architecture	91
2.2.5.1	Character-Content-Architecture	91
2.2.5.2	Raster-Graphics-Content-Architecture	99
2.2.6	Document Profile	140
2.2.7	Document Interchange Format	142
2.2.8	Relationship to Other DAPS	145

List of Figures

Figure 1.1 Conformance Status for VT Facilities	3
Figure 2.1 Examples of layout within body area	13
Figure 2.2 Example of text flow around figure	16
Figure 2.3 Example of synchronized text.	17

1. ISO VIRTUAL TERMINAL PROTOCOL

1.1 INTRODUCTION

The NBS/OSI Workshop Virtual Terminal (VT) SIG is making implementation agreements for the OSI Basic Class VT Service and Protocol, 9040 and 9041, including the first addenda to both 9040 and 9041.

These implementation agreements fall into the following categories.

- o Functionality to be implemented, i.e., functional units, etc..
- o Identification and specification of VT profiles to be supported by conforming implementations.
- o Agreements with regard to implementation issues not specified in ISO 9040 and 9041 and their addenda.
- o Resolution of problems with ISO 9040 and 9041 identified during implementation.
- o Statement of requirements to meet conformance to these agreements.

1.2 SCOPE AND FIELD OF APPLICATION

The TELNET profile is intended to support the following usage

- o a simple line at a time or character at a time dialogue
- o an application level gateway supporting TELNET/VT interoperation.

The Transparent profile supports the exchange of uninterpreted sequences of characters. This includes support of VT-users who wish to control terminals directly through the use of embedded control characters and escape sequences.

1.3 STATUS

This phase of the VT Agreements was completed May 5, 1988. No future enhancements will be made to this phase.

1.4 ERRATA

1.5 CONFORMANCE

Conformant VT implementations are required to support the 9041 Clause 13 requirements plus the additional conformance requirements identified below.

Figure 1.1 shows conformance status for VT facilities which are optional in the ISO VT standard. The terms used in the figure are defined as follows:

- "Mandatory" indicated the facility must be provided by all implementations which conform to these agreements.
- "Optional" indicates that the VT facility is not required to meet minimum conformance requirements but has been identified as providing additional useful capabilities.
- "Profile dependent" indicates that the requirement for the facility, if any, is included in the profile definitions.
- "Not addressed" indicates that the VT facility is outside the scope of these agreements.

* Conformance Status	Optional	Mandatory	Profile Development	Not Addressed
Profile Switch Functional Unit	X			
Multiple Interaction Negotiation Functional Unit				X
Negotiated Release				X
Urgent Data	X			
Break		X		
Delivery Control			X	
Enhanced Access Rules			X	
Structured COS			X	
Blocks Functional Unit				X
Fields Functional Unit			X	
RIOs			X	
S-mode			X	
A-mode			X	

Figure 1.1 Conformance Status for VT Facilities

It is not anticipated that new profiles will use quarantined delivery control.

For each mode of operation, (A-mode and S-mode) which is implemented, the default profile for that mode as defined in ISO 9040 must be supported. Implementations that support A-mode must support the A-mode default profile and at least one additional workshop approved A-mode profile. The Transparent profile does not count as an additional A-mode profile. Implementations that support S-mode must support the S-mode default profile and at least one additional workshop approved S-mode profile.

For each profile implemented, VTE parameter ranges or values specified in that workshop agreed profile and associated notes must be supported.

1.6 PROTOCOL

1.6.1 Protocol Elements

All Protocol Elements supported by the Switch Profile Negotiation and Break functional units have been selected.

1.6.2 Mapping of Protocol Elements

Mapping of protocol elements on to underlying ACSE or Presentation Services is as defined in ISO 9041.

1.6.3 Protocol Data Unit Structure

Protocol data unit structure is as defined in ISO 9041.

1.7 TELNET PROFILE

This profile provides support for TELNET-like operation for users of the ISO Virtual Terminal Service. It is based on the second DIS version of the ISO 9040 and 9041 documents.

The profile has the following arguments:

1. Which is used to represent the line length as the value of VTE parameter x-window for both display objects. This argument is mandatory and takes a nonnegative integer value. This argument is identified by the identifier for x-window for display object D.
2. Which is used to designate the default repertoire for both display objects. This argument is optional, if not present the full US ASCII set is the default. This parameter is identified by the identifier for repertoire assignment for the display object D.

The profile is defined as follows:

Display-objects=

```
{  
  { display-object-name=D, *(DISPLAY)*  
    do-access="WACA",   *(the association is initiated by the  
                      "terminal"VT-USER)*  
    dimensions="two",
```

```

x-dimension=
{
    x-bound="unbounded"
    x-addressing="no constraint",
    x-absolute="no",
    x-window=r1
},
y-dimension=

{
    y-bound="unbounded"
    y-addressing="higher only",
    y-absolute="no",
    y-window=0
},
repertoire-capability=2,
repertoire-assignment=profile-argument-r2,
    *(optional;default=(<ESC>2/8 4/2,"void",<ESC>2/1 4/0)
      full ASCII 7-bit (G0+C0) *)
repertoire-assignment=<ESC> 2/5 2/15 4/2,
    *(Virtual Terminal Service Transparent Set, used for
      "binary" TELNET option, always available)*
},
{

display-object-name=K, *(KEYBOARD)*
do-access="WACI",
dimensions="two",
x-dimension=
{
    x-bound="unbounded",
    x-addressing="no constraint",
    x-absolute="two",
    x-window=r1
},
y-dimension=
}
    y-bound="unbounded"
    y-addressing="higher only",
    y-absolute="no",
    y-window=0
},
repertoire-capability=2,
repertoire-assignment=profile-argument-r2,
    *(optional;default=(<ESC>2/8 4/2,"void",<ESC>2/1
      4/0)
      full ASCII 7-bit (G0+C0) *)
repertoire-assignment=<ESC> 2/5 2/15 4/2,
    *(Virtual Terminal Service Transparent Set, used
      for "binary" TELNET option, always available)*
},
Control-object=

```

```

{
  {
    CO-name=SY,*(SYNCHRONIZE)*
    CO-access="not-subject-to-access-control",
    CO-category="boolean",
    CO-size=1,
    CO-priority="urgent",
    CO-trigger="selected",
  },
  {
    CO-name=DI,*(DISPLAY-SIGNAL)*
    CO-access="WACA",
    CO-category="boolean",
    CO-size=5,
    CO-priority="normal",
    CO-trigger="selected"
  }
  {
    CO-name=KB,*(KEYBOARD-SIGNAL)*
    CO-access="WACI",
    CO-category="boolean"
    CO-size=5,
    CO-priority="normal"
    CO-trigger="selected"
  }
  {
    CO-name=NI,*(negotiation control object for initiator)*
    CO-access="WACI"
    CO-category="boolean"
    CO-size=4,
    CO-priority="normal",
    CO-trigger="selected"
  }
  {
    CO-name=NA,*(negotiation control object for acceptor)*
    CO-access="WACA"
    CO-category="boolean"
    CO-size=4,
    CO-priority="normal"
    CO-trigger="selected"
  }
  {
    CO-name=GA,*(go ahead)*
    CO-access="not subject to access control",
    CO-category="boolean",
    CO-size=1
    CO-priority="normal"
    CO-trigger="selected"
  }
},
Device-objects=
{

```

```

    {
        device-name=DISPLAY-DEVICE,
        device-display-object=D,
        device-default-CO-initial-value=1,"true",*("on")*
        device-minimum-X-array-length=1,* (no constraint) *
        device-minimum-Y-array-length=1,* (no constraint) *
        device-control-object=(SY,NA,DI),
            *(SYNC,NEGOTIATE-ACCEPTOR,DISPLAY-SIGNAL)*
        device-termination-event-list=NULL,
        device-default-CO-access="WACA",
        device-default-CO-priority="normal"
        *(other device parameters assume corresponding DO
        values)*
    },
    {
        device-name=KEYBOARD-DEVICE,
        device-display-object=K,
        device-default-CO-access="WACI",
        device-default-CO-priority="normal"
        device-default-CO-initial-value=1."true",*("on")*
        device-minimum-X-array-length=1,* (no constraint) *
        device-minimum-Y-array-length=1,* (no constraint) *
        device-control-object=(SY,NI,KB),
            *(SYNC,NEGOTIATE-INITIATOR,KEYBOARD-SIGNAL)*
        device-termination-event-list=NULL
        *(other device parameters assume corresponding DO
        values)*
    }
},
Type of delivery control = simple-delivery-control.

```

Notes:

1. Users of this profile should refer to the TELNET specification (MIL-STD-1782) and RFCs 854 and 855 for semantics of the TELNET commands. These documents can be obtained by contacting SRI International, DDN Network Information Center, 333 Ravenswood Ave., Menlo Park, CA 94025, (415) 859-3695.
2. This profile can be used only in A-mode.
3. Booleans in the KB and DI control objects are used in this profile to correspond to TELNET commands as follows:

Control Object	Boolean	TELNET
DI/KB	1	IP
DI/KB	2	AO
DI/KB	3	AYT
DI/KB	4	DM
DI/KB	5	BREAK

The equivalent of a TELNET command is achieved by sending a control object update toggling the boolean that corresponds to the desired TELNET command.

4. An update to the GA control object is equivalent to the TELNET Go Ahead command.
5. The equivalent of a TELNET SYNCH command is achieved by updating the SY control object and immediately updating the DI (or KB) control object with the DM boolean set "true". IP, AO, AYT, or BREAK commands may be accompanied by a SYNCH command by updating the SY control object and then updating the DI or KB control object toggling both the DM and the other desired boolean. When an update to the SY control object is received subsequent display object updates are discarded until an update to the DI or KB control object is received toggling the DM bit. If a VT-BREAK is received after an SY CO update has been received and prior to the corresponding DI or KB CO update toggling the DM boolean, the discarding of updates is terminated. This is necessary because the VT BREAK may have caused the DI or KB CO update to be purged.
6. The TELNET EC (erase character) command will be mapped to a pointer relative ($x := x - 1$) update and an erase current update. The TELNET EL (erase line) command should be mapped to an erase-full-x-array update. (an erase operation where the extent is defined as start-x, current) and a pointer update to set $x = 1$.
7. The NI and NA control objects are used to emulate the TELNET option negotiation facility. The facility is symmetric, allowing either party to open negotiation for a change of mode, and every negotiation must be accepted or rejected by the opposite party. The rules for negotiation for each of the option controls are as stated in RFC 854:
 - a. Only open negotiation for a change from the current state.
 - b. Only acknowledge negotiation for a change from the current state.
 - c. Do not send any other object updates with a negotiation outstanding.

For full symmetry, both the NI and NA control objects have the same value and consist of 4 booleans with the following semantics:

BIT Option Control	Value -
1 Remote Echo	"False" Echo is local; "true" echo remote

2	Suppress Go Ahead	"False" Go Ahead; "true" suppress Go Ahead
3	true = binary WACA, false = ASCII WACA	
4	true = binary WACI, false = ASCII WACI	

Booleans 3 and 4 control the use of the Transparent repertoire for the D and K display objects respectively. A value of "true" indicates the use of the binary repertoire; "false" indicates the use of the negotiated repertoire. When a party wants to change a repertoire assignment, it must complete a successful TELNET negotiation to change the option control. Then the party with the access rights to the display object in question is required to perform the corresponding secondary attribute model update.

- 8. No termination event list is specified so that data buffering and delivery can be controlled according to context. If local echoing is enabled, the local newline or enter event shall trigger a VT-DELIVER request. With remote echo a timeout or buffer length may be used to trigger a VT-DELIVER request. This buffer length may be 1.
- 9. The VT next x-array update will be sent in place of the TELNET NVT "CR,LF" sequence.
- 10. Option negotiation in TELNET can take place at any time during a session and modifies option settings one at a time. As Multiple Interaction Negotiation is not required by the NBS/OSI Implementor's Agreements, negotiation of TELNET options other than echo, character set, and the use of go-ahead is not supported by this profile.
- 11. In addition to constraints presented by VTE parameters, this profile permits only backward explicit addressing for the pointer dimension of both display objects. The x address of the pointer can be moved forward only by implicit pointer addressing. Addressing of the y dimension is limited to the next x-array operation.
- 12. While the "binary" repertoire is being used no mapping to pointer addressing or erase operations will be done.
- 13. The repertoire designation "7-bit ASCII (C0 and G0)" refers to the repertoire invoked by ISO 2022 defined character set designating escape sequences <ESC> 2/8 4/2, "void", <ESC> 2/1 4/0. The repertoire designation "7-bit ASCII (G0 only)" refers to the repertoire invoked by the ISO 2022 defined character set designating escape sequence <ESC> 2/8 4/2. The designation "binary" refers to the "Virtual Terminal Service Transparent Set" registered in the International Register under ISO 2375 and invoked by the escape sequence <ESC> 2/5 2/15 4/2.

14. If the "go ahead" has been negotiated then following a VT-BREAK, only the association acceptor has the right to send data. In the event of VT-BREAK the echo control objects are reinitialized to "false", meaning local echo. If remote echo is desired it must be re-negotiated following VT-BREAK.

CONFORMANCE

The following character sets are required:

- o The GO character set for U.S. 7-bit ASCII (values 32-126)
- o The full U.S. 7-bit ASCII (values 0-127)
- o The transparent character set, (see Note 13).

1.8 TRANSPARENT PROFILE

This profile is intended to provide a transparent mode of operation which allows VT-users to exchange transparently uninterpreted sequences of characters but with the added benefit of delivery control to enable the VT-users to determine when the character sequences are to be delivered. This profile may be used when VT-users wish to control terminals directly through the use of embedded control characters.

Profile argument r1 is optional and enables negotiation of a value for the VTE-parameter repertoire-assignment for the two display objects (which always have the same value of repertoire assignment when the profile is called). If omitted, the Virtual Terminal Transparent Set, ISO 2375 register value 125, is used as the default.

```
Display-objects *(double occurrence)*=
  ({display-object-name=DISPLAY-OBJECT-1,
    do-access="WACA",
    dimensions=1,
    x-dimensions=
      {x-addressing="no"*(no explicit motion)*
       *(x-bound,x-absolute, and x-window assume default
        ),
       *(erasure_capability, emphasis-capability,
        foreground-colour-capability, background-colour-
        capability
        & repertoire-capability assume default values)*
       repertoire-assignment=profile-argument-r1
       (display-object-name=DISPLAY-OBJECT-2,
        do-access="WACI",
        dimensions=1,
        x-dimension=
          {x-addressing="no"*(no explicit motion)*
```

*(x-bound, x-absolute, and x-window assume
default values)*

},

*(erasure-capability, emphasis-capability,
foreground-colour-capability, background-colour-
capability

& repertoire-capability assume default values)*

repertoire-assignment=profile-argument-r1

}},

type-of-delivery-control=simple-delivery-control

1. Use of this profile requires that the value of service parameter VT-mode for the VT-association is "A-Mode".
2. This profile is intended primarily for applications requiring a simultaneous two way exchange of sequences of uninterpreted characters. The semantics usually associated with the display object are not used; for the purposes of this profile, the primary attributes of the character-box graphic elements are actually octets which are passed directly to the real device. There is no relationship between the elements of the X-array and the character boxes of the real device; the secondary attributes of the display object are not utilized. The only operation on the display object which must be supported is the text operation. An alternative repertoire may be selected.
3. Support for the default (transparent) character set is required. It is strongly recommended that the profile parameter not be used.

1.9 APPENDIX A

1.9.1 Specific ASE Requirement

For specific ASE Requirements identified by the Upper Layer SIG for Virtual Terminals, (See Volume 2 Ongoing Agreements Document, Continuing Agreements Chapter 9.10.

2. OFFICE DOCUMENT ARCHITECTURE AND INTERCHANGE FORMAT

2.1 PART I - DOCUMENT ARCHITECTURE AND INTERCHANGE FORMAT

2.1.1 Introduction

Section 2 defines an Implementation Agreement based on Office Document Architecture (ODA) and Interchange Format, as defined in International Standard (ISO) 8613 and provides detailed specification for the implementor. (Note that throughout this agreement, references to ISO 8613 indicate the IS version, 1988). Such an agreement is termed a Document Application Profile according to ISO 8613.

ISO 8613 has seven parts:

Part 1 of the IS gives an introduction to the standard as a whole and provides a description of the general principles of ODA;

Part 2 defines the document structure model and a reference document processing model;

Part 4 defines the document profile;

Part 5 defines the interchange formats;

Part 6 defines the character content architectures;

Part 7 defines the raster graphics content architectures;

Part 8 defines the geometric graphics content architectures.

ISO 8613 is equivalent to the CCITT T.410 series of Recommendations. This Implementation Agreement uses ISO 8613 as the base standard.

2.1.2 Primary References

The following documents are referenced in the statement of the agreements relating to Office Document Architecture.

ISO 8613/1 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 1: Introduction and General Principles

ISO 8613/2 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 2: Document Structures

ISO 8613/4 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 4: Document Profile

ISO 8613/5 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 5: Office Document Interchange Format

ISO 8613/6 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 6: Character Content Architectures

ISO 8613/7 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 7: Raster Graphics Content Architectures

ISO 8613/8 - Information processing : Text and Office Systems; Office Document Architecture (ODA) and Interchange Format Part 8: Geometric Graphics Content Architectures

2.1.3 Additional References

ISO Standards

ISO 8859-1 - Information Processing - 8-bit Single-byte Coded Graphic Character Sets - Part 1: Latin Alphabet No. 1

ISO 8859-2 - Information Processing - 8-bit Single-byte Coded Graphic Character Sets - Part 2: Latin Alphabet No. 2

DIS 8859-3 - Information Processing - 8-bit Single-Byte Coded Graphic Character Sets - Part 3: Latin Alphabet No. 3

ISO 6937-1 - Information Processing - Coded Character Sets for Text Communication - Part 1: General Introduction

ISO 6937-2 - Information Processing - Coded Character Sets for Text Communication - Part 2: Latin Alphabetic and Non-Alphabetic Graphic Characters

ISO 2022 - Information Processing - ISO 7-Bit and 8-Bit Coded Character Sets - Code Extension Techniques

ISO 8632-1 - Information Processing Systems - Computer Graphics - Metafile for the Storage and Transfer of Picture Description Information - Part 1: Functional Specification

ISO 8632-2 - Information Processing Systems - Computer Graphics - Metafile for the Storage and Transfer of Picture Description Information - Part 2: Character Encoding

ISO 8632-3 - Information Processing Systems - Computer Graphics - Metafile for the Storage and Transfer of Picture Description Information - Part 3: Binary Encoding

ISO 8632-4 - Information Processing Systems - Computer Graphics - Metafile for the Storage and Transfer of Picture Description Information - Part 4: Clear Text Encoding

ISO 646 - Information Processing - ISO 7-Bit Coded Character Set for Information Interchange

ISO 8824 - Information Processing Systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)

ISO 8825 - Information Processing Systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)

CCITT Recommendations

T.6 - Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus 1984

T.4 - Standardization of Group 3 Facsimile Apparatus for Document Transmission 1984

T.411 - Open Document Architecture (ODA) and Interchange Format - Introduction and General Principles 1988

T.412 - Open Document Architecture (ODA) and Interchange Format - Document Structures 1988

T.414 - Open Document Architecture (ODA) and Interchange Format - Document Profile 1988

T.415 - Open Document Architecture (ODA) and Interchange Format - Document Interchange Format (ODIF) 1988

T.416 - Open Document Architecture (ODA) and Interchange Format - Character Content Architectures 1988

T.417 - Open Document Architecture (ODA) and Interchange Format - Raster Graphics Content Architectures 1988

T.418 - Open Document Architecture (ODA) and Interchange Format - Geometric Graphics Content Architectures 1988

T.501 - Document Application Profile MM for the Interchange of Formatted Mixed Mode Documents 1988

T.502 - Document Application Profile PM1 for the Interchange of Processable Form Documents 1988

T.503 - Document Application Profile for the Interchange of Group 4 Facsimile Documents 1988

Other References

INTAP-S007-03 - Multi-media (ODA/ODIF) Functional Standard Detail Description (AE.111n-J), Small Function Set Profiles of Document Interchange Format with Layout Information

INTAP-S007-04 - Multi-media (ODA/ODIF) Functional Standard Detail Description (AE.112n-J), Medium Function Set Profiles of Document Interchange Format with Layout Information

Technical and Office Protocols (TOP) Version 3.0 Specification

2.1.4 SCOPE AND FIELD OF APPLICATION

This implementation agreement defines a document application profile (DAP) suitable for interchanging documents in formatted form, processable form, or formatted processable form in accordance with ISO 8613.

The DAP is intended for interchange of compound documents between document processing systems. It is intended for documents potentially containing character text, raster graphics, and geometric graphics.

The documents addressed by this DAP range from simple memos to highly structured technical documents. Other DAPs may be defined in the future for other levels of document processing requirements.

2.1.5 STATUS

This is the first version of the stable on-going agreement dated June 1988.

2.1.6 ERRATA

None.

2.1.7 CONFORMANCE

Introduction

This section defines conformance requirements and provides guidelines for the interpretation of results of conformance testing.

Conformance Requirements

Conformance to this document application profile is defined in terms of an implementation's ability to act as an originator and/or recipient of data streams conformant to the syntax and semantics of ISO 8613 as well as meet all the requirements listed below:

IF THE IMPLEMENTATION IS AN ORIGINATOR :

- 1) generate data streams, for one or more of the document architecture classes
 - a) formatted document architecture (FDA)
 - b) processable document architecture (PDA)
 - c) formatted processable document architecture (FPDA)
- 2) for each document architecture class supported, generate data streams that include only constituents specified in the relevant sections of this implementation agreement.
- 3) for each constituent of each document architecture class supported, generate data streams that include only those attributes and combinations of attributes permitted by the relevant sections of this implementation agreement.
- 4) either
 - i) for each attribute of each constituent of each document architecture class supported, generate data streams that contain only basic attribute values as specified by the relevant sections of this implementation agreement.

or

- ii) for each attribute of each constituent of each document architecture class supported, generate data streams that contain both basic and non-basic attribute values as specified in the relevant sections of this implementation agreement.

IF THE IMPLEMENTATION IS A RECIPIENT :

- 5) receive data streams, for one or more of the document architecture classes
 - a) formatted document architecture (FDA)
 - b) processable document architecture (PDA)
 - c) formatted processable document architecture (FPDA)
- 6) for each document architecture class supported, receive data streams that include any of the constituents specified in the relevant sections of this implementation agreement.
- 7) for each constituent of each document architecture class supported, receive data streams that include any of the attributes or any combination of attributes permitted by the relevant sections of this implementation agreement.
- 8) either
 - i) for each attribute of each constituent of each document architecture class supported, receive data streams that contain only basic attribute values as specified by the relevant sections of this implementation agreement.

or
 - ii) for each attribute of each constituent of each document architecture class supported, receive data streams that contain both basic and non-basic attribute values as specified in the relevant sections of this implementation agreement.

Conformance Testing Definitions

Any implementation that can correctly generate data streams in

accordance with the conformance requirements listed above in 1), 2), 3) and 4)i, is defined as a "minimal conforming originator."

Any implementation that can correctly receive data streams in accordance with the conformance requirements listed above in 5), 6), 7), and 8)i, is defined as a "minimal conforming recipient."

2.2 PART II - NBS DOCUMENT APPLICATION PROFILE

2.2.1 Characteristics Supported by this DAP

The following sections describe the logical and layout features that can be represented in documents conforming to this document application profile. The features are described in terms that are typical of the user-perceived capabilities of current document processors. The features are grouped into logical features and layout features in order to relate them to their ODA representation.

Documents conforming to this document application profile may contain any or all of the following content architectures:

- a) character text,
- b) raster graphics,
- c) geometric graphics.

2.2.1.1 Logical characteristics

Document logical structure

The logical structure of documents comprise numbered segments (e.g., chapters, sections or numbered paragraphs), passages, paragraphs, figures and footnotes. Numbered segments can be nested and automatic numbering systems are provided for.

The logical structure of a document conforming to this document application profile consists of a hierarchy of logical objects. The following is an example of a generic document logical structure derived from this document application profile:

Document

Passage (s)

Paragraph

Text

Footnote

Footnote reference

Footnote body

Text

Figure

Text

Figure

Section level 1

Section number level 1

Section title

Passage

Paragraph

Figure

Section level 2

....

Document structure elements

Document

A document is composed of a sequence of numbered segments or passages each of which is optionally titled and consists of a sequence of paragraphs and/or figures and/or further passages or numbered segments.

Passage

A passage consists of any logical sequence of paragraphs, figures, and/or further passages or numbered segments that can be regarded as an entity for reading or for layout presentation.

For example, separate passages may be provided for:

- (a) the contents to be placed on the title page of a report,
- (b) the body of the report, and
- (c) the contents to be placed in appendices.

A table is a particular case of a passage. A single paragraph or a single figure is a simple case of a passage.

Segment

A segment is a part of a document which has an automatic number which precedes any other contents and which serves to identify the segment uniquely.

The contents of a segment may begin with a segment title starting on the same line as the segment number.

The document originator may define different classes of segments having in common some presentation features and/or some layout features. For example, the document originator may define a class of segments which always begin on a new page, and another class of segments which are laid out using a special left or right margin offset.

An automatically generated segment number consists of either a number or a series of numbers separated by instances of an arbitrary specified character string separator. In the case of a series of numbers, the segment number is equal to the automatically generated segment number (if any) of the enclosing segment followed by a single index number to uniquely identify the segment.

Index numbers are generated sequentially within any numbered segment. The method of numbering may be a combination of the following:

- a) Arabic numerals
- b) Upper/lower case letters
- c) Upper/lower case Roman numerals

Paragraph

A paragraph is a contiguous amount of content in the intended reading order; a paragraph may, for example, contain a mixture of embedded figures, footnote references, and character text.

A paragraph may contain zero, one or more embedded footnote references. Multiple consecutive footnote references, without intervening text, are also permitted.

A paragraph may contain zero, one or more embedded figures and, optionally, figure references. Multiple consecutive figures and/or figure references, without intervening text, are permitted.

A paragraph may comprise a number of character sequences concatenated together, for example if the character sequences were separately derived or generated.

The document originator may define different classes of paragraphs having in common some presentation features

and/or some layout features. For example, the document originator may define classes of paragraphs for "abstract", "standard paragraph", and "summary".

Figure

A figure is an amount of geometric graphics or raster graphics content designed to occupy a rectangular area.

One or more paragraphs can be associated with a figure, for example to provide captions or notes.

Footnote

A footnote consists of a footnote reference and a footnote body.

The footnote body is a contiguous amount of text that can be read out of sequence from the paragraph containing a reference to it.

Footnote reference

A footnote reference may have an automatically generated label or one supplied by the user. (Both types of footnote references may be present.) If the label is automatically generated then the label may be represented by Arabic numerals, upper or lower case Roman numerals, or upper or lower case alphabetic characters.

Automatically generated footnote numbers are incremented sequentially from an initial value which may be set to any non-negative value at the beginning of the document and reset at any segment or passage, as required.

Reference

A general purpose reference mechanism is provided within paragraph. For example, this reference may be used to reference figures, page numbers, chapter numbers, etc. in other parts of the document.

2.2.1.2 Layout characteristics

Document Layout Structure

The page layout structure allows for several pagesets (e.g., for introductory material and annexes in addition to the main text body, which could be in chapters.) The body area of a page may contain multiple columns and areas for graphics. Header and footer contents can also include figures.

The following is an example of a generic document layout structure derived from this document application profile:

```
Document
  Page set
    Page
      Header area
      Body area
        Single frame
        Multiple columns
        Individual frame(s)
        Mixed set of frames
      Footer area
      ...

```

Document layout structure elements

Document

A document consists of a sequence of one or more page sets.

Page set

The pages within a page set all have the same dimensions and orientation (landscape or portrait) but may differ in layout and/or content of the header and footer areas.

There may be an optional first page of one particular page layout and this may be followed by either of the following:

- a) Repeated pages with the same layout
- b) Repeated pages designed for alternating recto and verso layout

Page layout

This document application profile supports various page dimensions including the assured reproduction area of the ISO A4, North American Letter, North American Legal, and ISO A3. The default is the common assured reproduction area of ISO A4 which is equivalent to North American Letter.

A page layout consists of:

- a) An optional header area that is reserved for header contents
- b) A single body area
- c) An optional footer area that is reserved for footer contents

Particular header and footer contents are associated with each page layout.

Body area layout

The body area may be subdivided into rectangular frames. Thus the layout may consist of any sequence of:

- a) Single frame of fixed width, equal or less than body area width, and fixed height or height adjustable to fit contents
- b) Set of multiple column frames of fixed widths per column and fixed height or height adjustable to fit contents
- c) Individual frames with fixed position and dimensions
- d) Mixed set of frames with various properties, e.g., fixed-size figure frame with fixed-sized caption frame beneath and adjustable height text frame beside both

See figure 1 for illustrations.

Frames which have fixed position and dimensions are permitted to overlap.

Header area layout

This is a rectangular area above the body area. It may be subdivided into a number of rectangular frames, for example to contain textual information and graphics such as company logos.

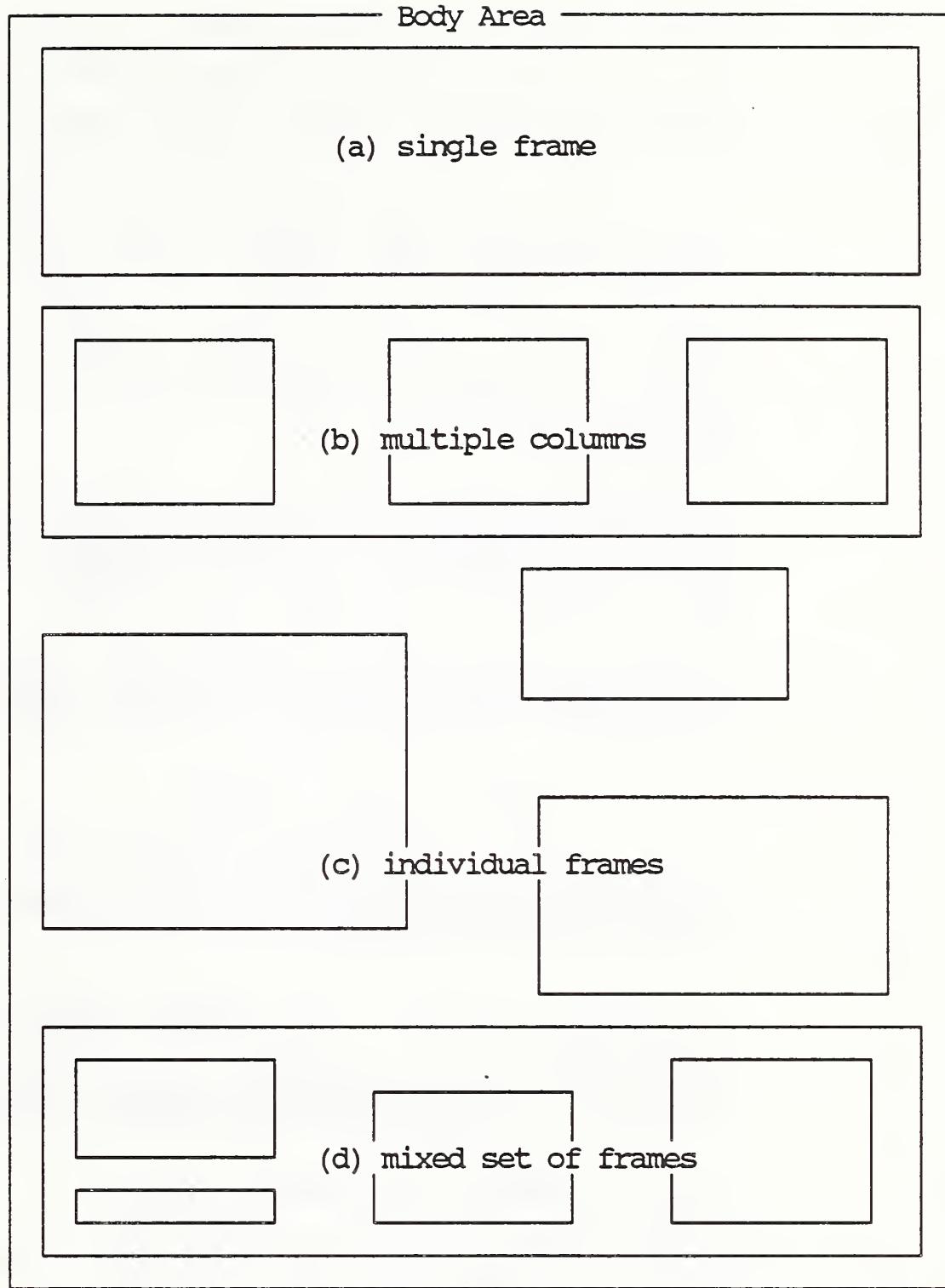


Figure 2.1 Examples of layout within body area

Footer area layout

This is a rectangular area below the body area. It may be sub-divided into a number of rectangular frames, for example to contain textual information and graphics such as company logos..

Header contents and footer contents

Header contents or footer contents may consist of a sequence of paragraphs and/or figures that are constrained to be laid out entirely within the corresponding header or footer area.

One or more automatically generated page numbers may be included anywhere within header contents and/or footer contents.

Header contents or footer contents must not include any footnote or footnote reference or automatic segment numbers.

Page numbering

An automatically generated page number may occur at any position within header contents or footer contents. Page numbers may be represented in Arabic numerals, lower/upper case Roman numerals or lower/upper case letters.

Page numbers are generated sequentially and the sequence can be restarted from any positive integer value at the beginning of any page set.

Layout of document logical contents

The sequence of passages and/or segments is laid out in one or more body areas such that it flows through the sequence of pages in the document.

Controls are needed in order to break the flow of contents at appropriate points. For example, following the passages to be placed on the title page of a document it may be required to control the flow in order to direct subsequent text onto a new page of a different page layout.

Layout of passage (or segment) contents

A passage may be laid out in any of the following ways:

- a) As separate passages (see below)
- b) Below the previous text within a containing passage
- c) As a sequence of passages

Layout of passage contents

Controls are available to guide the layout of passages or their subordinate paragraphs and figures.

A passage can be positioned at a fixed position (e.g. the

start) of a new body area or in a new frame below the previous contents of a body area.

In case of sets of multiple columns, content generally flows from the bottom of one column of the set to the top of the next column to the right.

Regardless of content type, the various paragraphs and figures in a passage may be laid out within specified frames.

The various methods of subdivision of body areas may be combined with certain frames being designated for flowing text and other frames for particular contents. Thus text may appear to flow around other contents. For example, several figures can be contained within a passage and effect of text flow around the figures and their captions can be produced. See figure 2 for illustration.

A new set of multiple frames can occur beneath a similar set. Thus parallel text (e.g., multilingual) can be synchronized or a table effect can be generated. See figure 3 for illustration..

A variation of the table technique can be used for labelling and annotating paragraphs.

A complete passage can be constrained to be contained in the same body area or frame (by indivisibility).

Layout controls

The following properties may be specified to control where body area or page breaks occur:

- a) New column set (New Layout Object)

This specifies that the contents should be laid out in the first column (or frame) of a new set of columns (or frames).

- b) Unconditional column break (New Layout Object)

This indicates that the contents must be displayed in the next column (or frame).

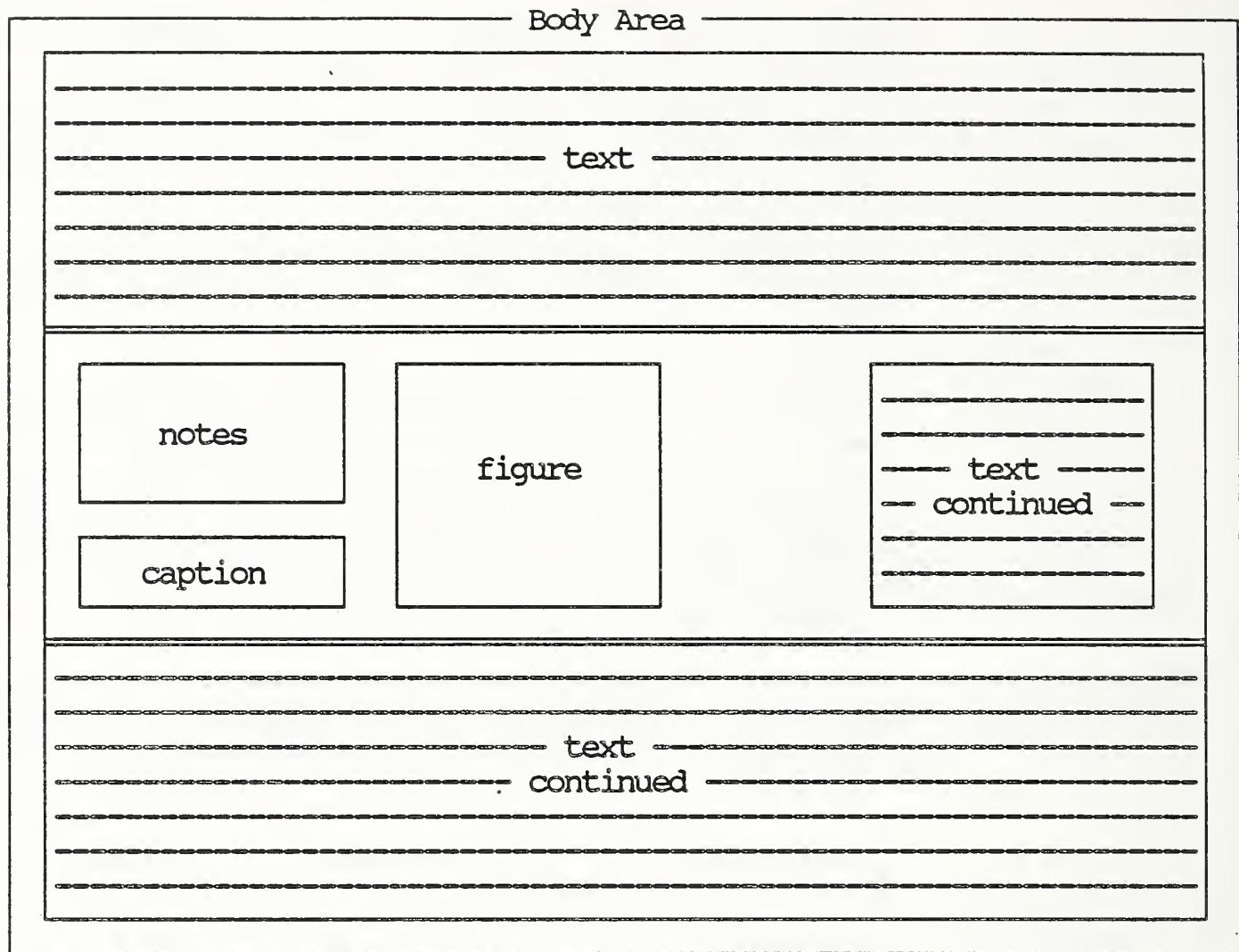


Figure 2.2 Example of text flow around figure

Note: "Caption" and "Notes" contain formatted character content.

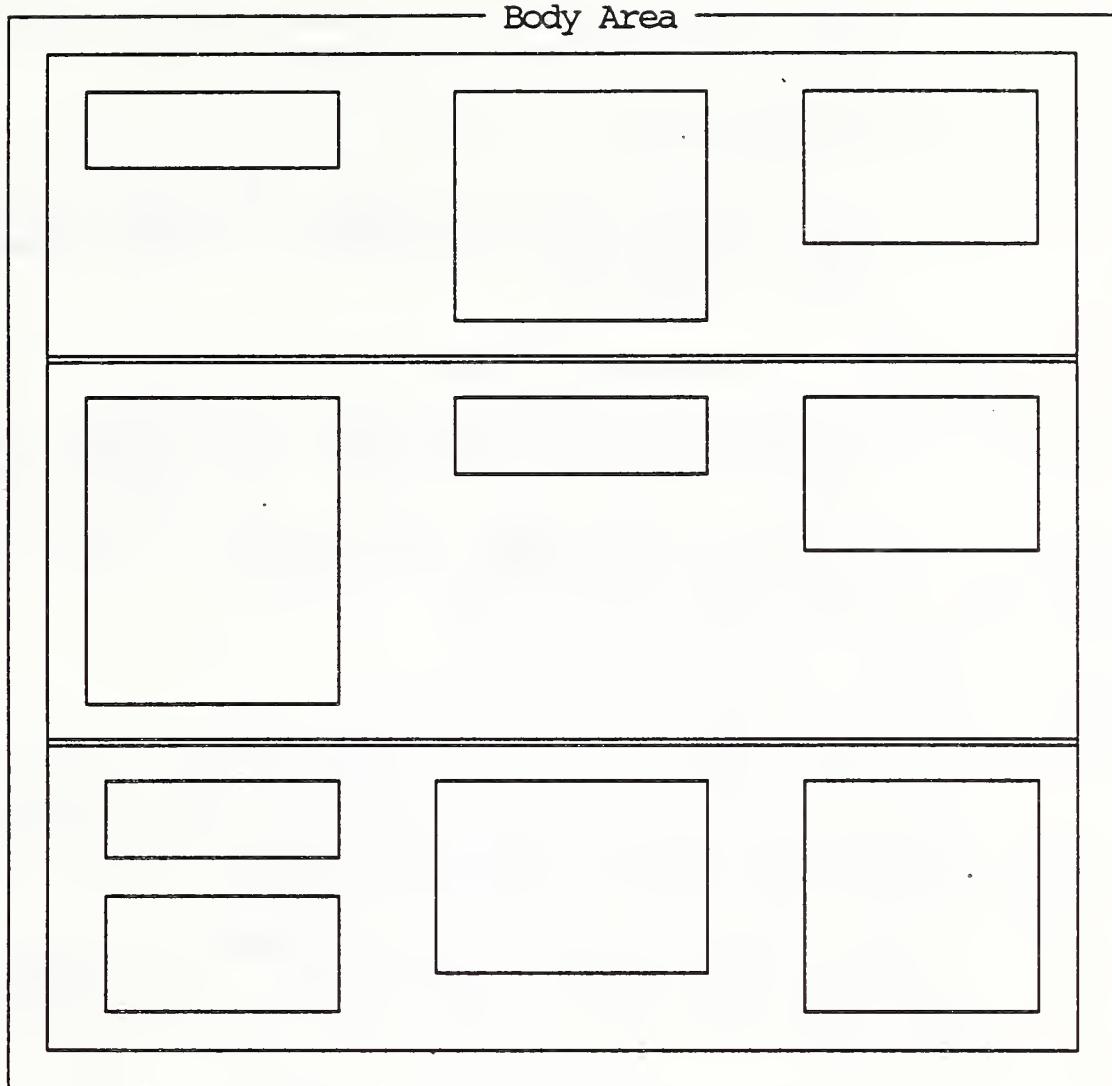


Figure 2.3 Example of synchronized text.

c) Layout object class

This indicates that the contents concerned must be displayed in a specified frame, e.g., to control figure positioning.

d) New page set (New Layout Object)

This indicates that the contents should be laid out in a new page set.

e) New page layout (New Layout Object)

This indicates that the contents should be laid out on a new page of a particular page layout.

f) Unconditional page break (New Layout Object)

This indicates that the contents must be displayed in the body area of the next page.

g) Indivisibility

This indicates that a passage (segment, paragraph or figure) must be laid out within a single frame, body area or page set.

h) Same page/same area (Same Layout Object)

This specifies that the start of a passage, numbered segment, paragraph, or figure, for example, must be laid out in the same frame or body area as the end of the previous content (for example, to keep a first paragraph with a title)

Layout of paragraph contents

A paragraph may or may not specify its own margins, alignment and tab stops. The indentation of the first line may be different from the remainder of the paragraph. The separation between successive paragraphs can be controlled.

Within a passage the contents of a paragraph may be laid out in two or more frames to allow text to flow around a figure. The figure may or may not be logically associated with that paragraph.

By using the widow and orphan features, layout of paragraphs can also be controlled in order to determine how a paragraph should be divided across two pages.

The orphan size specifies the minimum number of lines of text that must be allocated to the first body area or frame.

The widow size specifies the minimum number of lines of text that must be allocated to the last body area or frame when a paragraph is split over two or more body areas or frames.

Layout of figure contents

A figure may occur beneath the previous contents of a body area or frame or can be specified to occupy a particular frame.

Any paragraphs associated with the figure, for example, to provide captions or notes, can be positioned to occupy rectangular areas positioned above, below or beside the figure.

Layout of footnote contents

A footnote body may be placed at the bottom of a body area of a page and may or may not be constrained to be entirely in the same body area as the reference to it. If multiple footnotes occur in the same body area the corresponding footnote bodies can be placed in the body area in the same order as the reading order of their references.

2.2.1.3 Content Characteristics

A document may contain any of the following types of content:

- character text utilizing graphic characters as defined in ISO 6937 and ISO 8859 together with character presentation techniques defined in ISO 8613/6;
- raster graphics images encoded according to CCITT Recommendations T.4 and T.6 and in unencoded bitmap form; and
- geometric graphics images in accordance with the minimum capabilities of ISO 8632, each figure consisting of a single picture only.

2.2.2 TECHNICAL SPECIFICATION

2.2.2.1 Summary of Technical Specification

Overview

The NBS DAP, in accordance with ISO 8613, allows documents to be represented in the following forms:

- processable form, which facilitates the revision of a document by a recipient;
- formatted form, which facilitates the reproduction of a document as intended by the originator;
- formatted processable form, which facilitates the reproduction of a document as intended by the

originator or facilitates the revision of a document.

Specification of Constituents

This section specifies the required and optional constituents used for the representation of documents that conform to the NBS DAP.

Constituents specified as 'required' must occur in any document that conforms to the NBS DAP. Constituents listed as 'optional' may or may not be present in the document depending upon the requirements of the particular document.

Formatted Form Documents

Required Constituents

- a document profile
- layout object descriptions representing a specific layout structure

Optional Constituents

- layout object class descriptions representing a 'partial' generic layout structure
- presentation styles

Processable Form Documents

Required Constituents

- a document profile
- logical object class descriptions representing a 'complete' generic logical structure
- logical object descriptions representing a specific logical structure

Optional Constituents

- layout object class descriptions representing a 'complete' generic layout structure
- layout styles
- presentation styles

Formatted Processable Form Documents

Required Constituents

- a document profile
- logical object class descriptions representing a 'complete' generic logical structure
- logical object descriptions representing a specific logical structure
- layout object class descriptions representing a 'complete' generic layout structure
- layout object descriptions representing a specific layout structure

Optional Constituents

- layout styles
- presentation styles

Notation and Constraints

Introduction

This section presents the notation used in the diagrams and tables which define the permissible structures and attribute values for this document application profile.

There are two sets of diagrams: one describing the logical structure and one describing the layout structure. There are six tables describing attribute value ranges for logical constituents, layout constituents, character content, raster graphics content, geometric graphics content, and the document profile.

Although the layout of these tables is similar, some differences exist. In general, constraints are expressed for constituents by listing an ODA attribute name together with a set of permissible values identified for those attributes required to be present in the interchanged stream and for those additionally permitted in the interchanged stream. For example,

content-architecture-class {cp|cfp}

specifies for a given constituent that the content-architecture-class attribute in this DAP may take one of the values character-processable or character-formatted-processable.

Attributes in the tables specifying values for the character, raster, and geometric content also specify BASIC, NON-BASIC, and DEFAULT values as well as detailing for which content architecture class the attribute may be specified. For example,

select-graphic-rendition	BASIC	{0..7,9,10..19, 21..27,29}
	NON-BASIC	{NONE}
	DEFAULT	{0}
	CLASS	{cf,cp,cfp}

specifies, for a given content-information attribute, that the select-graphic-rendition control function may be one or more of the basic values representing normal intensity (0), bold (1), faint (2), italicized (3), underlined (4) and so on; that no non-basic values may be specified; that the default is normal intensity (0); and that the control function may be specified for any of the character content architecture classes.

There are no non-basic values allowed for attributes in the logical and layout object and object class descriptions. The respective default values, when different from IS 8613, are specified in the document profile attribute "document application profile defaults." For example,

dimensions	{#horizontal{#fixed{9240}}} #vertical{#fixed{12400}}}
------------	--

specifies for the document profile attribute dimensions that the default values for the horizontal and vertical are equal to the common assured reproduction area of ISO A4 and North American Letter.

Notation

This section informally describes a meta-language used to define, in terms of a two-level grammar, the NBS notation used in the specification of this document application profile.

The first level provides production rules for the direct specification of attribute values whereas the second level grammar provides productions for the indirect specification

of the attributes "bindings", "generator for subordinates" and "content generator".

The notation used in this Implementation Agreement is an extension of the notation defined in Annex A of IS 8613/2.

Grammar Meta-Language

The grammars have a BNF-style that uses the following meta-language symbols:

::=	Used to specify that the string of symbols on the right-hand side is to be substituted for the non-terminal symbol on the left-handside;
->	Used to indicate that the non-terminal symbol on the left-hand side evaluates to the string of symbols on the right-hand side;
	Used to separate alternatives;
< >	Used as a pair of symbols to delimit a non-terminal symbol;
<< >>	Used as a pair of symbols to delimit a nonterminal symbol that is specified in the second-level grammar;
-- --	Used as a pair of symbols to delimit a comment string;
{ }	Used as a pair of symbols to delimit a syntactical unit;
[]	Used as a pair of symbols to delimit an optional syntactical unit;
...	Used following a syntactical unit to indicate that the syntactical unit may be repeated;
" "	Used as a pair of symbols to delimit a terminal symbol;
+	Used to indicate a string concatenation

First level Grammar

```
<attribute-specification> ::= <attribute-name>[**] {<conditional-value>|<attribute-value-range>}  
<attribute-name> ::= -- An attribute name from ISO  
8613--
```

<conditional-value>	::=CASE {<boolean expression>} {"<simple-value>"}...
<boolean-expression>	::=[<name><rel-op>] <atomic-value>
<attribute-value-range>	::= <composite-value> <simple-value>
<composite-value>	::= <single-range> <set-range> <seq-range>
<single-range>	::= "#" <parameter-name> <attribute-value-range>
<parameter-name>	::= --A parameter or sub-parameter name from ISO 8613--
<set-range>	::= "(" <simple-value> ["," <simple-value>]... ")"
<seq-range>	::="(" {<simple-value>}... ")"
<simple-value>	::=<constraint> <keyword> <atomic-value> <expr-value>
<constraint>	::=<binding-constraint> <constr-expr-constraint> <<content-gen-constraint>> <reference-constraint>
<binding-constraint>	::="INITIALIZATION" "(" {<<binding-name>>}... ")" "MANIPULATION" "(" {<<binding-name>>}... ")"
<constr-expr-constraint>	::=<op1> "(" <constr-expr-constraint> ")" <opN> "(" <construction-list> ")" <DAP-constituent>
<op1>	::=<<iter>> <<poss>> <<opt>> <<rep>> <<optrep>>
<opN>	::=<<ser>> <<any>> <<set>> <<cho>> <<seq>> <<agg>>
<construction-list>	::=<constr-expr-constraint> <constr-expr-constraint> "," <construction-list>

<reference-constraint>	::= --string literal--
<keyword>	::="AS_8613" "NONE" "N/A"
<DAP-constituent> name>[".."<variable>]	::=<DAP-constituent-
<DAP-constituent-name>	::= Logdoc, Passage, NumberedSegment, Number, Title, Paragraph, FNote, FNBody, Figure, Text, Reference, Ref, Raster, Geometric, Hdr- Or-Ftr-Content, PageNumber, Laydoc, Pageset, Page, RPage, VPage, Header, Footer, BodyArea, FrameA, FrameB, FrameC, FrameD, FrameE, FrameF, FrameG, FrameH, FrameI, FrameJ, FrameK, Block
<variable>	::= -- string literal that distinguishes a particular instantiation of the DAP constituent.--
<expr-value>	::=<function-value> <expr>
<function-value>	::={"OBJECT-CLASS-ID-OF" "({<DAP- constituent> [{" "<DAP-constituent>}...]}")"} {"OBJECT-ID-OF" "({<DAP-constituent> [{" "<DAP-constituent>}...]} ")")"}
<expr>	::=<simple-expr> <expr><rel-op><simple- expr> "SIZE"<rel-op><simple-expr>
<simple-expr>	::=<term> <simple-expr><add-op><term>
<term>	::=<atomic-value> <term><mult- op><atomic-value>
<atomic-value>	::=--Any attribute value specified in ISO 8613 Part 2,4,6,7 or 8--
<rel-op>	::= "=" "<" "." ">" "<=" ">=" "__"
<add-op>	::= "+" "-"
<mult-op>	::= "*" "/"
<name>	::={ [<DAP-constituent>"#"]<attribute-name> ["#"<parameter-name>]... }

Keywords

**

Used to denote that if this attribute is specified for a constituent in the generic structure then the corresponding attribute in the specific structure may not be specified. Note that the use of facility is currently under study.

AS_8613

Used to denote that any value may be specified that is permitted in ISO 8613.

NONE

Used to indicate that there are no valid values for this attribute or parameter.

N/A

Used to denote that there is no applicable attribute value

OBJECT_CLASS_ID_OF

Used to specify any object call identifier from the set of instances of a particular constituent constraint.

OBJECT_ID_OF

Used to specify any object identifier from the set of instances of a particular constituent constraint.

STYLE_OF

Used to specify any style identifier from the set of instances of a particular style constraint.

INITIALIZATION

Constrains bindings that identify which binding name value pairs can be initialized for a particular constituent constraint. Note that a table is provided in the second level grammar that defines the allowed initialization for all instances of bindings.

MANIPULATION

Used to identify a binding that provides an expression value. A BNF specification is provided in the second level grammar that defines the allowed expressions for all instances of bindings.

Delimiters

- {...} Used to delimit a syntactical unit.
- [...] Used to delimit optional units.
- (...) Used as a general delimiter.
- <...> Used to delimit a non-terminal symbol.
- /*...*/ Used to delimit a comment.

Separators

- :
- :

: Used to separate set elements.
| : Used to separate alternatives.

.. : Used to specify a range of integers or characters.
: Used to announce a parameter and attribute value range.
. : Used to distinguish instances of object classes or objects.

Relational operators

= : equality.
> : greater than.
< : less than.
≥ : greater than or equal to.
≤ : less than or equal to.
◊ : not equal.
≡ : equivalent to.

Arithmetic Operators

+ : addition.
- : subtraction.
* : multiplication.
/ : division.

Second-level Grammar

- The valid construction expressions for an object class (i.e. the allowable values for the attribute "generator for subordinates") are specified using a meta-construction defined in the first-level grammar. The semantics of a meta-construction are defined such that the result of its evaluation is a construction expression. The result of evaluating a <DAP-constituent> is the identifier of an object class derived from the named constituent constraint. The terminals comprising <opl> and <opN> are called construction operators and are defined in the following second-level grammar. --
- The operator opt evaluates to a construction expression composed of an optional construction factor specifying an object class identifier or construction expression which is derived from the specified construction expression constraint. --

<<opt>> → "OPT" {--object class identifier-- |
--contained expression--}

- The operator rep evaluates to a construction expression composed of an repetitive construction factor specifying an object class identifier or construction expression which is derived from the specified construction expression constraint. --

<<rep>> → "REP" {--object class identifier-- |
--contained expression--}

- The operator optrep evaluates to a construction expression composed of an optional repetitive construction factor specifying an object class

identifier or construction expression which is derived from the specified construction expression constraint. --

<<optrep>> -> "OPTREP" {--object class identifier-- |
 --contained expression--}

- The operator **cho** evaluates to a construction expression composed of an choice construction factor specifying an object class identifier or construction expression which is derived from the specified construction expression constraint. —

<<cho>> -> "CHO" {--object class identifier-- |
 --contained expression--}

- The operator **seq** evaluates to a construction expression composed of an sequence construction factor specifying an object class identifier or construction expression which is derived from the specified construction expression constraint. —

<<seq>> -> "SEQ" {--object class identifier-- |
 --contained expression--}

- The operator **agg** evaluates to a construction expression composed of an aggregate construction factor specifying an object class identifier or construction expression which is derived from the specified construction expression constraint. —

<<agg>> -> "AGG" {--object class identifier-- |
 --contained expression--}

- The operator **iter** evaluates to either no construction expression or a construction expression which evaluates to a sequence of objects belonging to object classes derived from the specified construction expression constraint. The object classes need be neither identical nor distinct. —

<<iter>> ::= <null-constr-expr> | <iter-constr-expr>

<null-constr-expr> -> --null construction expression--

<iter-constr-expr> -> <constr-term> |
 "SEQ" <term-sequence>
 "AGG" <term-sequence> |
 "CHO" <term-sequence>

<term-sequence> ::= <constr-term> |
 <constr-term> <term-sequence>

<constr-term> ::= <constr-factor> |
 "OPT" <constr-factor> |
 "REP" <constr-factor>

"OPTREP" <constr-factor>

<constr-factor> ::= --object class identifier-- |
--contained expression--

- The operator poss evaluates to either no construction expression or a construction expression which evaluates to either an empty sequence or an object belonging to a class derived from the specified construction expression constraint. —

<>poss> ::= <null-constr-expr> | <poss-constr-expr>

<null-constr-expr> -> --null construction expression--

<poss-constr-expr> -> <constr-term> |
"CHO" <term-sequence>

<term-sequence> ::= <constr-term> |
<constr-term> <term-sequence>

<constr-term> ::= <constr-factor> |
"OPT" <constr-factor>

<constr-factor> ::= --object class identifier-- |
--contained expression--

- The operator ser evaluates to either no construction expression or a construction expression which evaluates to a sequence of objects one instance of each belonging to an object class derived from the construction expression constraint specified in the corresponding position in the construction list.—

<>ser> ::= <null-constr-expr> | <ser-constr-expr>

<null-constr-expr> -> --null construction expression--

<ser-constr-expr> -> <constr-term> |
"SEQ" <term-sequence> |
"CHO" <term-sequence>

<term-sequence> ::= <constr-term> |
<constr-term> <term-sequence>

<constr-term> ::= <constr-factor>

<constr-factor> ::= --object class identifier-- |
--contained expression--

- The operator any evaluates to either no construction expression or a construction expression which evaluates to an object belonging to an

object class derived from any one of the specified construction expression constraints. --

```
<<any>> ::= <null-constr-expr> | <any-constr-expr>  
<null-constr-expr> -> --null construction expression--  
<any-constr-expr> -> <constr-term> |  
    "CHO" <term-sequence>  
<term-sequence> ::= <constr-term> |  
    <constr-term> <term-sequence>  
<constr-term> ::= <constr-factor>  
<constr-factor> ::= --object class identifier-- |  
    --contained expression--
```

- The operator set evaluates to either no construction expression or a construction expression which evaluates to a sequence of objects; one instance of each belonging to an object class derived from a distinct construction expression constraint within the specified list, in any order. --

```
<<set>> ::= <null-constr-expr> | <set-constr-expr>  
<null-constr-expr> -> --null construction expression--  
<set-constr-expr> -> <constr-term> |  
    "SEQ" <term-sequence> |  
    "AGG" <term-sequence> |  
    "CHO" <term-sequence>  
<term-sequence> ::= <constr-term> |  
    <constr-term> <term-sequence>  
<constr-term> ::= <constr-factor>  
<constr-factor> ::= --object class identifier-- |  
    --contained expression--
```

- This document application profile permits bindings to be used for automatic numbering schemes, e.g., page numbers and section numbers. This production describes the conventions to be used. The constituent constraints identify bindings by names which describe the use of each binding. Any number of bindings may be used corresponding to each name. --

```
<<binding name>> ::= <numbers> | "PGnum" |  
    <numberstrings> | <prefixes> |  
    <suffixes> | <separators>
```

<code><numbers></code>	<code>::= "number-" + <n></code>
<code><numberstrings></code>	<code>::= "numberstring-" + <n></code>
<code><prefixes></code>	<code>::= "prefix-" + <n></code>
<code><suffixes></code>	<code>::= "suffix-" + <n></code>
<code><separators></code>	<code>::= "separator-" + <n></code>
<code><n></code>	<code>::= --any character string from the set of characters: "0".."9"--</code>

- A numberstring binding can be initialized in an object superior to the relevant numbering scheme (e.g., a passage can initialize a numbering scheme for subordinate sections). A number binding can be initialized at each hierarchical level (e.g., section) to start the numbering sequence for subordinates. The prefix, separator and suffix bindings can be initialized at a level above the numbering scheme and can be re-specified at any level within the numbering scheme.

<u>Binding Names</u>	<u>Initial value</u>
<code>number-n</code>	any non-negative number
<code>PGnum</code>	any non-negative number
<code>numberstring-n</code>	space character
<code>prefix-n</code>	string literal
<code>suffix-n</code>	string literal
<code>separator-n</code>	string literal

The binding "numberstring" of the numbered object can be used to construct the character string representation of the number. If the numbered objects are all of the same object class, the ORDINAL() numeric function application can be used to create the sequence. If the numbered objects are of different object classes, sequences are generated by incrementing the value of another binding called `number-n`.—

<code><number-n></code>	<code>::= INC(B_REF(PREC(CURR_OBJ)) (number-n))</code>
-------------------------------	--

- The "numberstring" binding is referenced by a content generator in a subordinate of the numbered object.—

<code><numberstring-n></code>	<code>::= <hierarchic exprn> <simple exprn></code>
-------------------------------------	--

<code><hierarchic exprn></code>	<code>::= B_REF(SUP_OBJ(CURR_OBJ)) (numberstring-n)</code> <code>+ B_REF(SUP_OBJ(CURR_OBJ))</code> <code>(separator-n) + <simple exprn></code>
---------------------------------------	--

<code><simple exprn></code>	<code>::= <string function></code> <code>(B_REF(CURR_OBJ) (number-n))</code> <code> <string function> (ORD(CURR_OBJ))</code>
-----------------------------------	---

| <string literal>

<string function> ::= MK_STR | U_ALPHA | L_ALPHA |
 U_ROM | L_ROM

— There are four possible ways of determining the value for the attribute "content generator," as follows: —

<<content-gen-constraint>> ::= <content-generator-1>
 <content-generator-2>
 <content-generator-3>
 <content-generator-4>

<content-generator-1> ::= <num st1> | <pre st1> + <num st1> |
 <num st1> + <suf st1> |
 <pre st1> + <num st1> + <suf st1>

<num st1> ::= B_REF(SUP_OBJ(CURR_OBJ))
 (numberstring-n)

<pre st1> ::= B_REF(SUP_OBJ(CURR_OBJ)) (prefix-n)
 | <string literal>

<suf st1> ::= B_REF(SUP_OBJ(CURR_OBJ)) (suffix-n)
 | <string literal>

<content-generator-2> ::= <pgnum st2> | <pgpre st2> +
 <pgnum st2> | <pgnum st2> +
 <pgsuf st2> | <pgpre st2> +
 <pgnum st2> + <pgsuf st2>

<pgpre st2> ::= <string literal>

<pgsuf st2> ::= <string literal>

<pgnum st2> ::= MK_STR (<numeric expression2>)
 | U_ALPHA (<numeric expression2>)
 | L_ALPHA (<numeric expression2>)
 | U_ROM (<numeric expression2>)
 | L_ROM (<numeric expression2>)

<numeric expression2> ::= B_REF(SUP(CURR_INST(<class
 or type>, CURR_OBJ))) (number)

<class or type> ::= frame | page |
 OBJECT_ID_OF({FrameA | FrameB |
 FrameC | FrameD | FrameG |
 FrameH | FrameI | FrameJ |
 FrameK | Page | RPage |
 VPage})

<content-generator-3> ::=

```

MK_STR (<numeric expression3>
| U_ALPHA (<numeric expression3>)
| L_ALPHA (<numeric expression3>)
| U_ROM   (<numeric expression3>)
| L_ROM   (<numeric expression3>)

<numeric expression3> ::= B_REF(SUP(CURR_INST(frame,
CURR_OBJ))) (PGnum)

<content-generator-4> ::= <num st4> | <pre st4> + <num st4> | <num
st4> + <suf st4> | <pre st4> + <num st4>
+ <suf st4>

<num st4> ::= B_REF(<any-object>)
(numberstring-n)

<pre st4> ::= B_REF(<any-object>) (prefix-n) | <string
literal>

<suf st4> ::= B_REF(<any-object>) (suffix-n) | <string
literal>

<any-object> ::= OBJECT_IF_OD({Logdoc | Passage |
NumberedSegment | Number | Title | Paragraph
| FNote | FNBody | Figure | Text | Reference
Ref | Raster | Geometric | Hdr-Or-Ftr-
Content | PageNumber | Laydoc | Pageset |
Page | RPage | VPage | Header | Footer |
BodyArea | FrameA | FrameB | FrameC | FrameD
| FrameE | FrameF | FrameG | FrameH | FrameI
FrameJ | FrameK | Block})

```

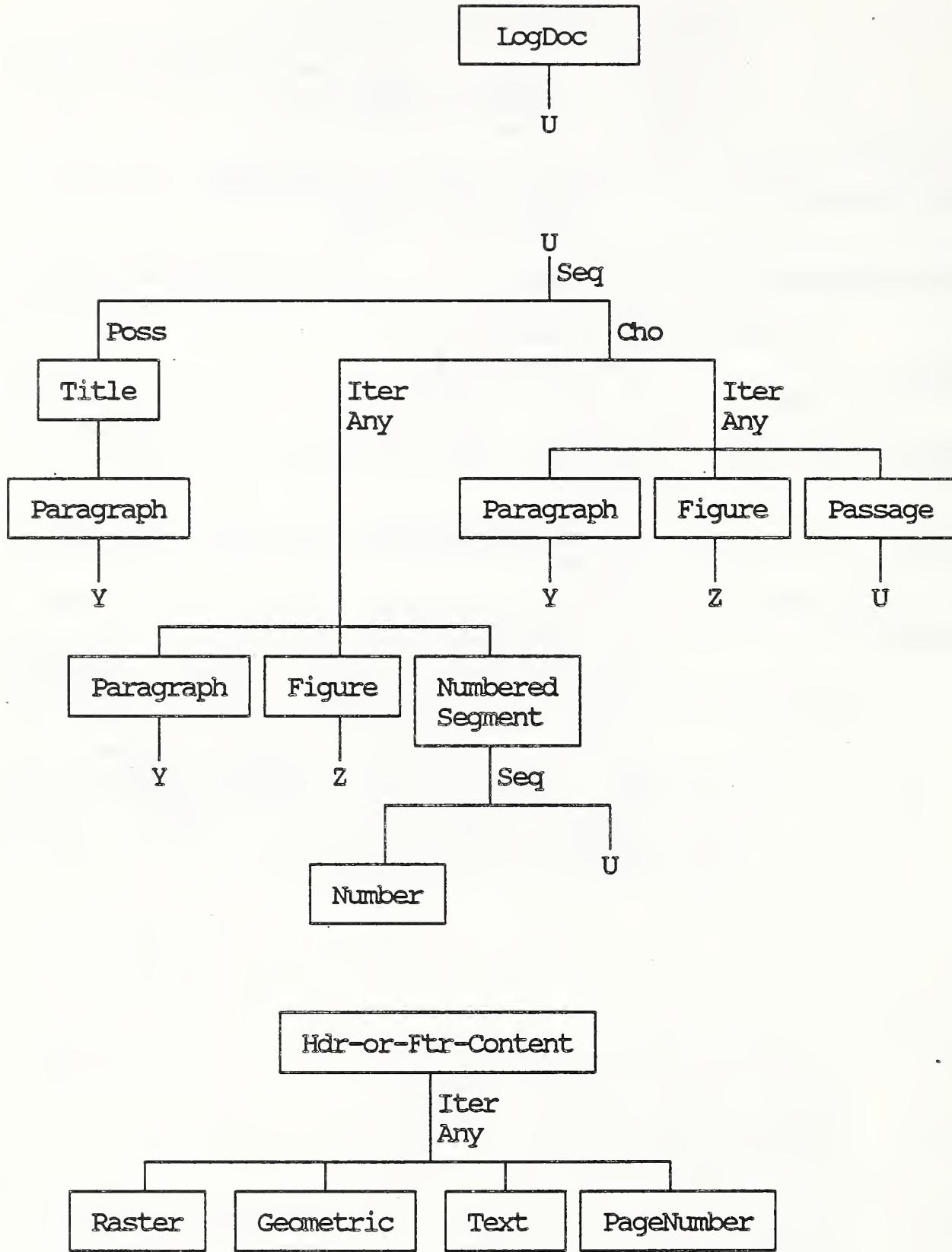


Diagram of Logical Structure (1 of 2)

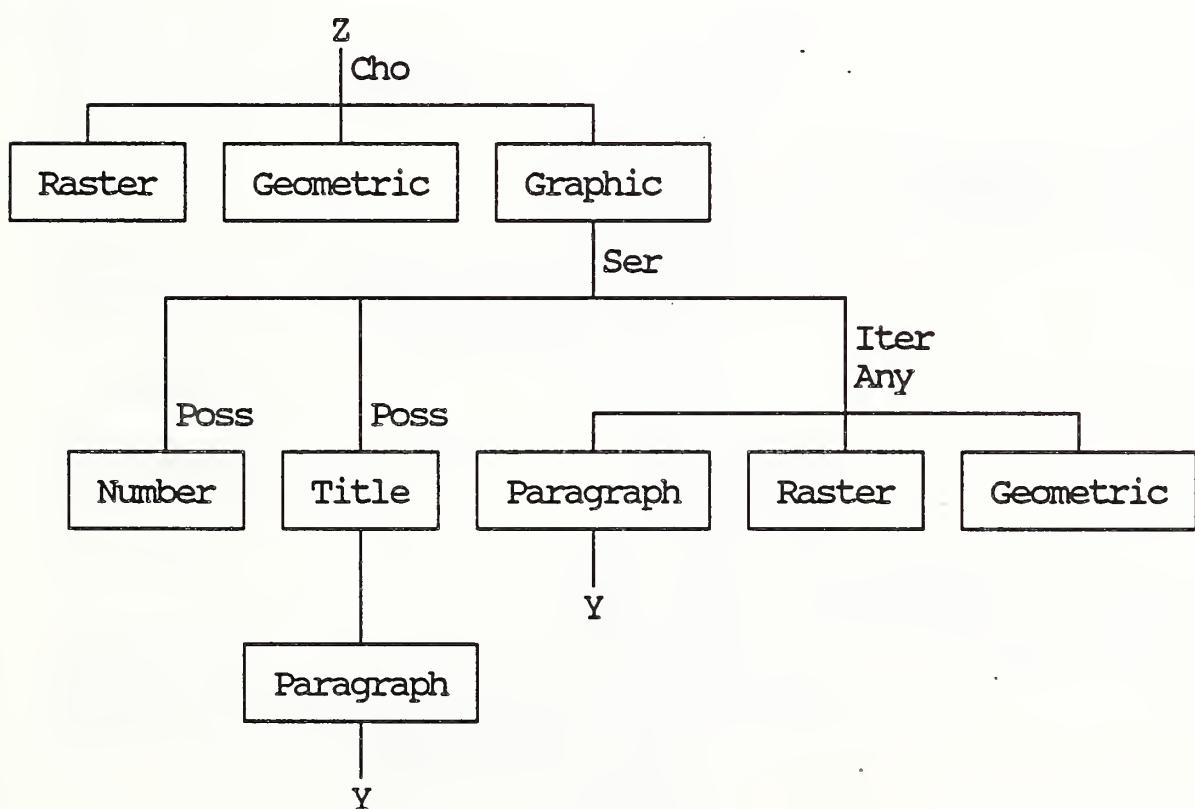
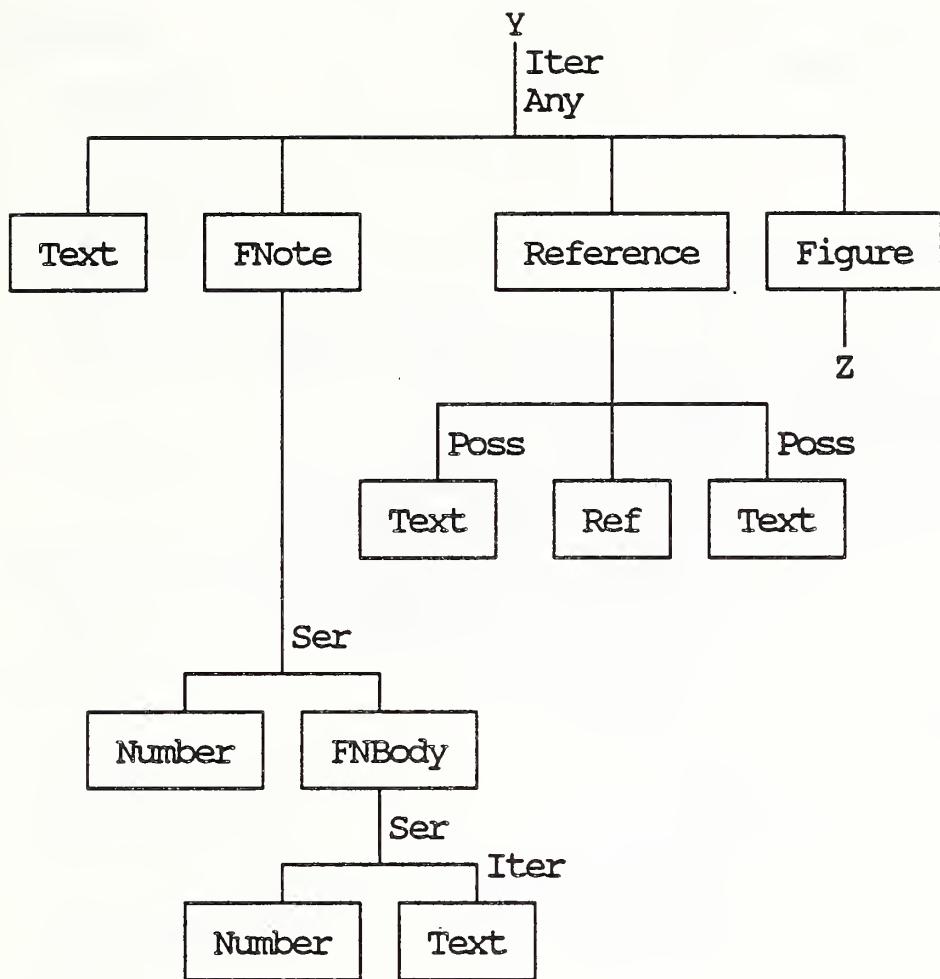


Diagram of Logical Structure (2 of 2)

2.2.3 LOGICAL STRUCTURE

Logdoc

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {document-logical-root} |
| Object-Class-Identifier | {AS_8613} |
| Generator-For-Subordinates | {ser(poss>Title),
any(iter(any(Paragraph,
Figure,NumberedSegment,
Text,Raster,Geometric)),
iter(any(Paragraph,Figure,
Passage,Text,Raster,
Geometric))))}
{"Logdoc"} |
| Application-Comments | |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Logdoc)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|---|
| Layout-Style | {STYLE_OF(L-style1)} |
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(number,
numberstring,prefix,
suffix,separator)} |
| Default-Value-Lists | {AS_8613} |
| Protection | {AS_8613} |

--Specific--

| | |
|------------------------|---|
| Layout-Style | {STYLE_OF(L-style1)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(number,
numberstring,prefix,
suffix,separator)} |
| Default-Value-Lists | {AS_8613} |
| Protection | {AS_8613} |
| Application-Comments | {"Logdoc"} |

Passage

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-For-Subordinates | {ser(poss>Title),
any(iter(any(Paragraph,
Figure,NumberedSegment,
Text,Raster,Geometric),
iter(any(Paragraph,Figure,
Passage,Text,Raster,
Geometric))))} |
| Application-Comments | {"Passage"} |

--Specific--

| | |
|-------------------|--------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Passage) } |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|--|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(number,
numberstring,prefix,
suffix,separator) } |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3) } |

--Specific--

| | |
|------------------------|--|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(number,
numberstring,prefix,
suffix,separator) } |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3) } |
| Application-Comments | {"Passage"} |

NumberedSegment

REQUIRED

--Generic--

Object-Type
Object-Class-Identifier
Generator-For-Subordinates

```
{composite-logical-object}
{AS_8613}
{seq(Number,{ser(poss>Title),
any(iter(any(Paragraph,
Figure,NumberedSegment,
Text,Raster,Geometric)),
iter(any(Paragraph,Figure,
Passage,Text,Raster,
Geometric))))})
{MANIPULATION(number)}
{"NumberedSegment"}
```

Bindings
Application-Comments

--Specific--

Object-Identifier
Object-Class

```
{AS_8613}
{OBJECT_CLASS_ID_OF
(NumberedSegment)}
{AS_8613}
```

Subordinates

PERMITTED

--Generic--

Resource
User-Readable-Comments
User-Visible-Name
Bindings

```
{AS_8613}
{AS_8613}
{AS_8613}
{INITIALIZATION(number,
numberstring,prefix,
suffix,separator)
MANIPULATION(numberstring)}
{AS_8613}
{STYLE_OF(L-Style3)}
```

Protection
Layout-Style

--Specific--

User-Readable-Comments
User-Visible-Name
Bindings

```
{AS_8613}
{AS_8613}
{INITIALIZATION(number,
numberstring,prefix,
suffix,separator)
MANIPULATION(number,
numberstring)}
{AS_8613}
{STYLE_OF(L-Style3)}
{"NumberedSegment"}
```

Protection
Layout-Style
Application-Comments

Number

REQUIRED

--Generic--

| | |
|-------------------------|-------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Content-Generator | {<content-generator-1>} |
| Application-Comments | {"Number"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Number)} |

PERMITTED

--Generic--

| | |
|----------------------------|---|
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style1)} |
| Content-Architecture-Class | CASE
cf {2 8 2 6 0}
cp {2 8 2 6 1}
cfp {2 8 2 6 2} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style4)} |

--Specific--

| | |
|----------------------------|---|
| Presentation-Style | {STYLE_OF(P_Style1)} |
| Content-Architecture-Class | CASE
cf {2 8 2 6 0}
cp {2 8 2 6 1}
cfp {2 8 2 6 2} |
| Content-Generator | {<content-generator-1>} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style4)} |
| Application-Comments | {"Number"} |

Title

REQUIRED

--Generic--

| | |
|----------------------------|----------------------------|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {Paragraph} |
| Application-Comments | {"Title"} |

--Specific--

| | |
|-------------------|-----------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Title)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|----------------------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |

--Specific--

| | |
|------------------------|----------------------|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |
| Application-Comments | {"Title"} |

Paragraph

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(Text,FNote,
Reference,Figure,Raster,
Geometric))} |
| Application-Comments | {"Paragraph"} |

--Specific--

| | |
|-------------------|-------------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF
(Paragraph)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|----------------------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |

--Specific--

| | |
|------------------------|----------------------|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |
| Application-Comments | {"Paragraph"} |

FNote

REQUIRED

--Generic--

| | |
|----------------------------|----------------------------|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {ser(Number, FNBody) } |
| Application-Comments | {"FNote"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(FNote) } |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|--|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(numberstring,
number)
MANIPULATION(numberstring,
number)} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3) } |

--Specific--

| | |
|------------------------|--|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {INITIALIZATION(numberstring,
number)
MANIPULATION(numberstring,
number)} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3) } |
| Application-Comments | {"FNote"} |

FNBody

REQUIRED

--Generic--

| | |
|----------------------------|-----------------------------|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {ser(Number,(iter(Text))))} |
| Layout-Style | {STYLE_OF(L-Style3)} |
| Application-Comments | {"FNBody"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(FNBody)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |

--Specific--

| | |
|------------------------|----------------------|
| Layout-Style | {STYLE_OF(L-Style3)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Application-Comments | {"FNBody"} |

Figure

REQUIRED

--Generic--

Object-Type
Object-Class-Identifier
Generator-for-Subordinate

```
{composite-logical-object}
{AS_8613}
{ser(poss(Number), poss>Title),
 iter(any(Paragraph, Text,
 Raster, Geometric)))}
{"Figure"}
```

Application-Comments

--Specific--

Object-Identifier
Object-Class
Subordinates

```
{AS_8613}
{OBJECT_CLASS_ID_OF(figure)}
{AS_8613}
```

PERMITTED

--Generic--

Resource
User-Readable-Comments
User-Visible-Name
Bindings

```
{AS_8613}
{AS_8613}
{AS_8613}
{MANIPULATION(number,
 numberstring) }
{AS_8613}
{STYLE_OF(L-Style3) }
```

--Specific--

User-Readable-Comments
User-Visible-Name
Bindings

```
{AS_8613}
{AS_8613}
{MANIPULATION(number,
 numberstring) }
{AS_8613}
{STYLE_OF(L-Style3) }
{"Figure"}
```

Text

REQUIRED

--Generic--

| | |
|-------------------------|------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Application-Comments | {"Text"} |

--Specific--

| | |
|-------------------|----------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Text)} |

PERMITTED

--Generic--

| | |
|----------------------------|--|
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style2)} |
| Content-Architecture-Class | CASE
cf {2 8 2 6 0}
cp {2 8 2 6 1}
cfp {2 8 2 6 2}
{AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style5)} |
| Content-Portions | {AS_8613} |

--Specific--

| | |
|----------------------------|--|
| Presentation-Style | {STYLE_OF(P-Style2)} |
| Content-Architecture-Class | CASE
cf {2 8 2 6 0}
cp {2 8 2 6 1}
cfp {2 8 2 6 2}
{AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style5)} |
| Content-Portions | {AS_8613} |
| Application-Comments | {"Text"} |

Reference

REQUIRED

--Generic--

| | |
|----------------------------|--------------------------------------|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {ser(poss(Text),Ref,
poss(Text))} |
| Application-Comments | {"Reference"} |

--Specific--

| | |
|-------------------|-------------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF
(Reference)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|---|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {MANIPULATION(numberstring,
number)} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |

--Specific--

| | |
|------------------------|---|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {MANIPULATION(numberstring,
number)} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style3)} |
| Application-Comments | {"Reference"} |

Ref

REQUIRED

--Generic--

| | |
|-------------------------|------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Application-Comments | {"Ref"} |

--Specific--

| | |
|-------------------|---------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Ref)} |

PERMITTED

--Generic--

| | |
|----------------------------|-------------------------|
| Content-Generator | {<content-generator-4>} |
| Content-Portions | {AS_8613} |
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style2)} |
| Content-Architecture-Class | CASE |
| | cp {2 8 2 6 1} |
| | cfp {2 8 2 6 2} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style5)} |

--Specific--

| | |
|----------------------------|-------------------------|
| Content-Generator | {<content-generator-4>} |
| Content-Portions | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style2)} |
| Content-Architecture-Class | CASE |
| | cp {2 8 2 6 1} |
| | cfp {2 8 2 6 2} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style5)} |
| Application-Comments | {"Ref"} |

Raster

REQUIRED

--Generic--

| | |
|-------------------------|------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Application-Comments | {"Raster"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF(Raster)} |

PERMITTED

--Generic--

| | |
|----------------------------|-----------------------|
| Content-Portions | {AS_8613} |
| Content-Architecture-Class | {2 8 2 7 2} /* rfp */ |
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style3)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style6)} |

--Specific--

| | |
|----------------------------|-----------------------|
| Content-Portions | {AS_8613} |
| Content-Architecture-Class | {2 8 2 7 2} /* rfp */ |
| Presentation-Style | {STYLE_OF(P-Style3)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style6)} |
| Application-Comments | {"Raster"} |

Geometric

REQUIRED

--Generic--

| | |
|-------------------------|------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Application-Comments | {"Geometric"} |

--Specific--

| | |
|-------------------|-------------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | {OBJECT_CLASS_ID_OF
(Geometric)} |

PERMITTED

--Generic--

| | |
|----------------------------|-----------------------|
| Content-Portions | {AS_8613} |
| Content-Architecture-Class | {2 8 2 8 0} /* gfp */ |
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style4)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style6)} |

--Specific--

| | |
|----------------------------|-----------------------|
| Content-Portions | {AS_8613} |
| Content-Architecture-Class | {2 8 2 8 0} /* gfp */ |
| Presentation-Style | {STYLE_OF(P-Style4)} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style6)} |
| Application-Comments | {"Geometric"} |

Hdr-Or-Ftr-Content

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {composite-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(Raster, Geometric,
Text, PageNumber))} |
| Application-Comments | {"Hdr-or-Ftr-Content"} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |

PageNumber

REQUIRED

--Generic--

| | |
|-------------------------|-------------------------|
| Object-Type | {basic-logical-object} |
| Object-Class-Identifier | {AS_8613} |
| Content-Generator | {<content-generator-2>} |
| Application-Comments | {"PageNumber"} |

PERMITTED

--Generic--

| | |
|----------------------------|----------------------|
| Resource | {AS_8613} |
| Presentation-Style | {STYLE_OF(P-Style2)} |
| Content-Architecture-Class | {2 8 2 6 1} /* cp */ |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Protection | {AS_8613} |
| Layout-Style | {STYLE_OF(L-Style2)} |

L-Style1

REQUIRED

| | |
|-------------------------|-----------|
| Layout-Style-Identifier | {AS_8613} |
| Layout-Object-Class | {AS_8613} |

PERMITTED

| | |
|------------------------|-----------|
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

L-Style2

REQUIRED

| | |
|-------------------------|-----------|
| Layout-Style-Identifier | {AS_8613} |
|-------------------------|-----------|

PERMITTED

| | |
|---------------------|-----------|
| Block-Alignment | {AS_8613} |
| Concatenation | {AS_8613} |
| Indivisibility | {AS_8613} |
| Layout-Category | {AS_8613} |
| Layout-Object-Class | {AS_8613} |
| New-Layout-Object | {AS_8613} |
| Same-Layout-Object | {AS_8613} |

| | |
|------------------------|-----------|
| Offset | {AS_8613} |
| Separation | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

L-Style3

REQUIRED

| | |
|-------------------------|-----------|
| Layout-Style-Identifier | {AS_8613} |
|-------------------------|-----------|

PERMITTED

| | |
|------------------------|-----------|
| Indivisibility | {AS_8613} |
| Layout-Object-Class | {AS_8613} |
| New-Layout-Object | {AS_8613} |
| Same-Layout-Object | {AS_8613} |
| Synchronisation | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

L-Style4

REQUIRED

| | |
|-------------------------|-----------|
| Layout-Style-Identifier | {AS_8613} |
|-------------------------|-----------|

PERMITTED

| | |
|------------------------|-----------|
| Block-Alignment | {AS_8613} |
| Concatenation | {AS_8613} |
| Indivisibility | {AS_8613} |
| Layout-Category | {AS_8613} |
| Layout-Object-Class | {AS_8613} |
| New-Layout-Object | {AS_8613} |
| Offset | {AS_8613} |
| Same-Layout-Object | {AS_8613} |
| Separation | {AS_8613} |
| Synchronisation | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

L-Style5

REQUIRED

| | |
|-------------------------|-----------|
| Layout-Style-Identifier | {AS_8613} |
|-------------------------|-----------|

PERMITTED

| | |
|------------------------|-----------|
| Block-Alignment | {AS_8613} |
| Concatenation | {AS_8613} |
| Fill-Order | {AS_8613} |
| Indivisibility | {AS_8613} |
| Layout-Category | {AS_8613} |
| Layout-Object-Class | {AS_8613} |
| New-Layout-Object | {AS_8613} |
| Offset | {AS_8613} |
| Same-Layout-Object | {AS_8613} |
| Separation | {AS_8613} |
| Synchronisation | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

L-Style6

REQUIRED

Layout-Style-Identifier {AS_8613}

PERMITTED

| | |
|------------------------|-----------|
| Block-Alignment | {AS_8613} |
| Indivisibility | {AS_8613} |
| Layout-Category | {AS_8613} |
| Layout-Object-Class | {AS_8613} |
| New-Layout-Object | {AS_8613} |
| Offset | {AS_8613} |
| Same-Layout-Object | {AS_8613} |
| Separation | {AS_8613} |
| Synchronisation | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

P-Style1

REQUIRED

Presentation-Style-Identifier {AS_8613}

PERMITTED

| | |
|-----------------------------------|--|
| Border | {AS_8613} |
| Character-Presentation-Attributes | /* see section on character content */ |
| Colour | {AS_8613} |
| Transparency | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

P-Style2

REQUIRED

Presentation-Style-Identifier {AS_8613}
Content-Architecture-Class CASE
cp {2 8 2 6 1}
cfp {2 8 2 6 2}

PERMITTED

| | |
|-----------------------------------|--|
| Border | {AS_8613} |
| Character-Presentation-Attributes | /* see section on character content */ |
| Colour | {AS_8613} |
| Transparency | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

P-Style3

REQUIRED

Presentation-Style-Identifier {AS_8613}
Content-Architecture-Class {2 8 2 7 2} /* rfp */

PERMITTED

| | |
|--|--|
| Border | {AS_8613} |
| Colour | {AS_8613} |
| Raster-Graphic-Presentation-Attributes | /* see section on raster graphics content */ |
| Transparency | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

P-Style4

REQUIRED

Presentation-Style-Identifier {AS_8613}
Content-Architecture-Class {2 8 2 7 2} /* gfp */

PERMITTED

| | |
|---|--|
| Border | {AS_8613} |
| Colour | {AS_8613} |
| Geometric-Graphic-Presentation-Attributes | /* see section on geometric content */ |

| | |
|------------------------|-----------|
| Transparency | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

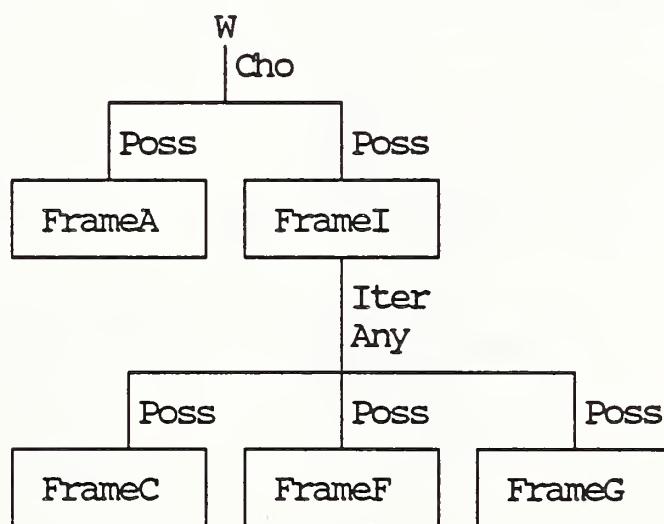
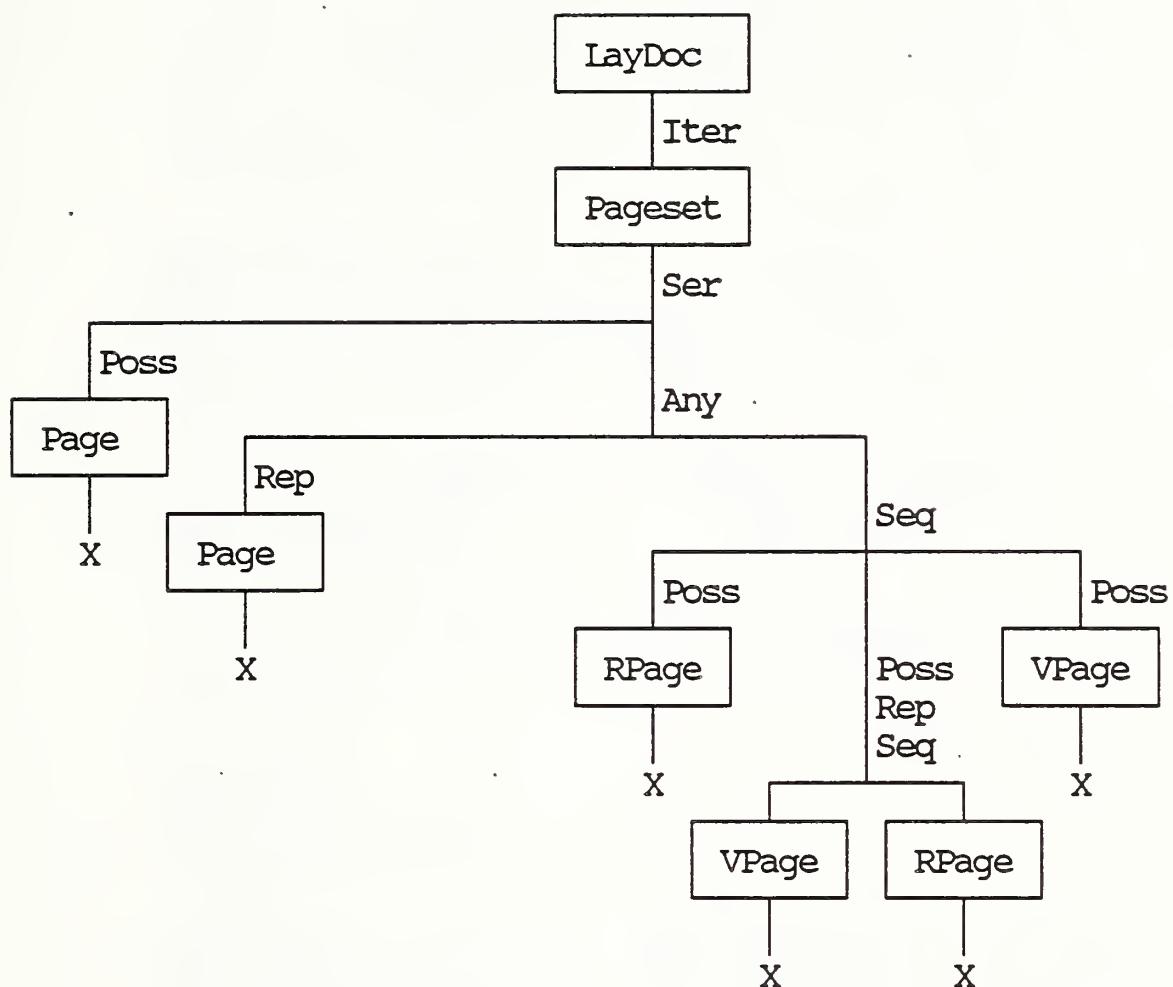


Diagram of Layout Structure (1 of 2)

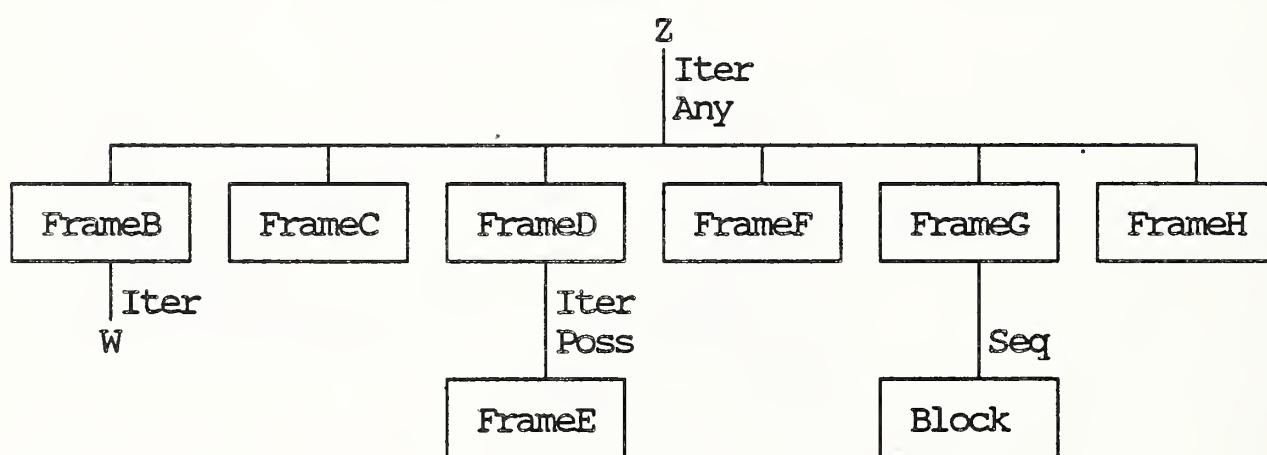
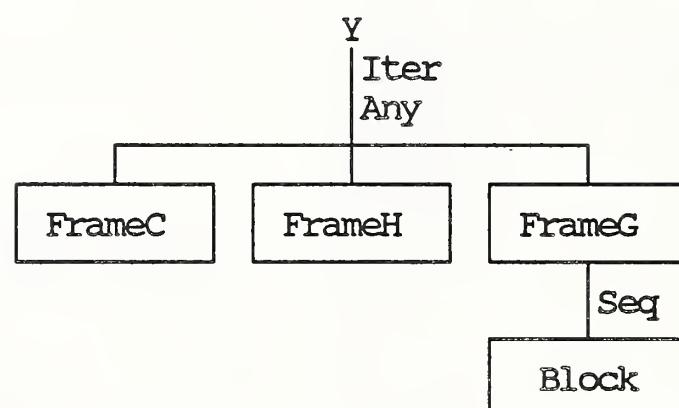
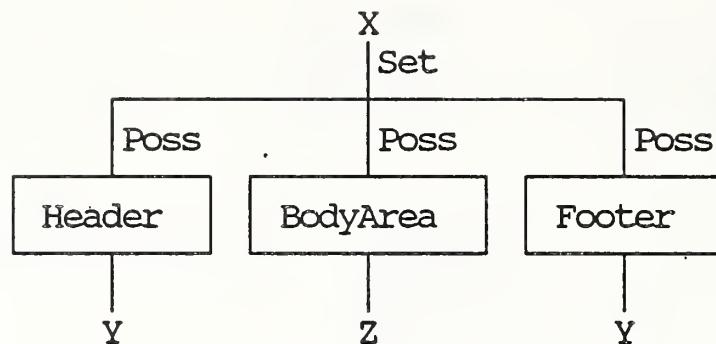


Diagram of Layout Structure (2 of 2)

2.2.4 LAYOUT STRUCTURE

Laydoc

REQUIRED

--Generic--

| | |
|----------------------------|------------------------|
| Object-Type | {document-layout-root} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(pageset)} |
| Application-Comments | {"Laydoc"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(Laydoc)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|--------------------------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Default-Value-Lists | {AS_8613} |
| Bindings | {Initialization (PGnum)} |

--Specific--

| | |
|------------------------|------------------------------|
| Object-Type | {document-layout-root} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(Laydoc)} |
| fpda | {N/A} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Default-Value-Lists | {AS_8613} |
| Bindings | {Initialization (PGnum)} |
| Application-Comments | {"Laydoc"} |

PageSet

In the expression for "Generator for Subordinates" in this object, there are two instances each of the objects 'Rpage.x' and 'Vpage.y'. The dot notation is used to show that both occurrences of Rpage.x are objects of the type 'Rpage', and if they are used in a generic structure, they must both refer to the same single occurrence of an 'Rpage' object class.

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {pageset} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {ser(poss(Page), any(rep(Page),
seq(poss(Rpage.x),
poss(rep(seq(Vpage.y,
Rpage.x)),
poss(Vpage.y))))} |
| Application-Comments | {"PageSet"} |

--Specific--

| | |
|-------------------|-------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(PageSet)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|--------------------------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {Initialization (PGnum)} |

--Specific--

| | |
|------------------------|-------------------------------|
| Object-Type | {pageset} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(PageSet)} |
| fpda | {N/A} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Bindings | {Initialization (PGnum)} |
| Application-Comments | {"PageSet"} |

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {page} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {set(any(opt(Frame J,
poss(Header)),
any(Frame K,
poss(BodyArea)),
any(opt(Frame J,
poss(Footer))))} |
| Application-Comments | {"Page"} |

--Specific--

| | |
|-------------------|---|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| Subordinates | fda {N/A}
fpda {OBJECT_CLASS_ID_OF(Page)}
{AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|---|
| Resource | {AS_8613} |
| Dimensions | /*Assured reproduction areas for
ISO-A4, ISO-A3, NAL,
North American Legal,
for each with both portrait and
landscape orientations */ |
| Medium-Type | /*Nominal Page Size{ISO-A4, ISO-A3,
NAL, North American Legal,
for each with both portrait and
landscape orientations*/
(#Side Of Sheet('unspecified')) |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Page-Position | {AS_8613} |
| Bindings | {MANIPULATION (PGnum)} |

--Specific--

| | |
|--------------|--------------------------------|
| Object-Type | {page} |
| Object-Class | CASE |
| | fda {OBJECT_CLASS_ID_OF(Page)} |
| | fpda {N/A} |

| | |
|------------------------|--|
| Dimensions | /*Assured reproduction areas for ISO-A4, ISO-A3, NAL, North American Legal, for each with both portrait and landscape orientations*/ |
| Medium-Type | /*Nominal Page Size(ISO-A4, ISO-A3, NAL, North American Legal, for each with both portrait and landscape orientations*) |
| User-Readable-Comments | (#Side Of Sheet('unspecified')) |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Page-Position | {AS_8613} |
| Colour | {AS_8613} |
| Bindings | {MANIPULATION (PGnum)} |
| Application-Comments | {"Page"} |

RELATIONS

| | |
|------------|---------------------------------|
| Dimensions | == SIBLING(Vpage(#dimensions)); |
| Dimensions | == SIBLING(Rpage(#dimensions)); |

Note: the relations formulae are used to satisfy the constraint that all pages within an instance of a Pageset must have the same dimensions. Relations apply to both generic and specific structures.

Note: Dimensions for ISO A4, ISO A3, and NAL, nominal page size and assured reproduction area are as defined in ISO 8613-2.

For North American Legal the dimensions are:

| | |
|----------------------------|---------------|
| nominal page: | 10200 x 16800 |
| assured reproduction area: | 9500 x 16000 |

REQUIRED

--Generic--

| | |
|----------------------------|---|
| Object-Type | {page} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {set(any(opt(Frame J,
poss(Header)),any(Frame K,
poss(BodyArea)),any(opt(Frame J,
poss(Footer))))} |
| Medium-Type | /*Nominal Page Size{ISO-A4, ISO-A3,
NAL, North American Legal, for
each with both portrait and
landscape orientations*/
{#Side Of Sheet{'recto'}}}
("Rpage") |
| Application-Comments | |

--Specific--

| | |
|-------------------|--|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| Subordinates | fda {N/A}
fpda {OBJECT_CLASS_ID_OF(RPage)}
{AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|--|
| Resource | {AS_8613} |
| Dimensions | /*Assured reproduction areas for
ISO-A4, ISO-A3, NAL,
North American Legal, for each with
both portrait and landscape
orientations*/
{MANIPULATION (PGnum)} |
| Bindings | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Page-Position | {AS_8613} |
| Colour | {AS_8613} |

--Specific--

| | |
|--------------|---|
| Object-Type | {page} |
| Object-Class | CASE |
| Dimensions | fda {OBJECT_CLASS_ID_OF(RPage)}
fpda {N/A}
/*Assured reproduction areas for
ISO-A4, ISO-A3, NAL, |

| | |
|------------------------|--|
| Medium-Type | North American Legal, for each with both portrait and landscape orientations*/
/*Nominal Page Size{ISO-A4, ISO-A3, NAL, North American Legal, for each with both portrait and landscape orientations*/
{#Side Of Sheet('recto')}{MANIPULATION (PGnum)}
{AS_8613}
{AS_8613}
{AS_8613}
{AS_8613}
{AS_8613}
{"Roage"} |
| Bindings | |
| User-Readable-Comments | |
| User-Visible-Name | |
| Transparency | |
| Page-Position | |
| Colour | |
| Application-Comments | |

RELATIONS

Note: Dimensions for ISO A4, ISO A3, and NAL, nominal page size and assured reproduction area are as defined in ISO 8613-2.

For North American Legal the dimensions are:

nominal page: 10200 x 16800
assured reproduction area: 9500 x 16000

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {page} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {set(any(opt(Frame J,
poss(Header)),any(Frame K,
poss(BodyArea)),any(opt(Frame J,
poss(Footer))))} |
| Medium-Type | /*Nominal Page Size{ISO-A4, ISO-A3,
NAL, North American Legal, for
each with both portrait and
landscape orientations*/
{#Side Of Sheet{ 'verso' }}
{"Vpage"} |
| Application-Comments | |

--Specific--

| | |
|-------------------|--|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| Subordinates | fda
fpda
{OBJECT_CLASS_ID_OF(VPage) }
{AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|---|
| Resource Dimensions | {AS_8613}
/*Assured reproduction areas for
ISO-A4, ISO-A3, NAL, North
American Legal, for each with both
portrait and landscape
orientations*/
{MANIPULATION(PGnum) } |
| Bindings | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Page-Position | {AS_8613} |
| Colour | {AS_8613} |

--Specific--

| | |
|--------------|--|
| Object-Type | {page} |
| Object-Class | CASE |
| Dimensions | fda
fpda
{OBJECT_CLASS_ID_OF(VPage) }
{N/A}
/*Assured reproduction areas for
ISO-A4, ISO-A3, NAL, North |

American Legal, for each with both
portrait and landscape
orientations*/
/*Nominal Page Size{ISO-A4,ISO-A3,
NAL, North American Legal, for
each with both portrait and
landscape orientations*/
{#Side Of Sheet{'verso'}}}
{MANIPULATION(PGnum) }
{AS_8613}
{AS_8613}
{AS_8613}
{AS_8613}
{AS_8613}
{"Vpage"}

Medium-Type

Bindings

User-Readable-Comments

User-Visible-Name

Transparency

Page-Position

Colour

Application-Comments

RELATIONS

Dimensions

= SIBLING(Page(#dimensions));

Dimensions

= SIBLING(Rpage(#dimensions));

Note: Dimensions for ISO A4, ISO A3, and NAL, nominal page size and assured reproduction area are as defined in ISO 8613-2.

For North American Legal the dimensions are:

nominal page: 10200 x 16800
assured reproduction area: 9500 x 16000

Header

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(FrameH,
FrameC,FrameG))} |
| Position | {#fixed{AS_8613}} |
| Dimensions | {#horizontal{#fixed{AS_8613}}}
{#vertical{#fixed{AS_8613}}} |
| Application-Comments | {"Header"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(Header)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90, 270} |

--Specific--

| | |
|------------------------|--|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(Header)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {#horizontal{#fixed{AS_8613}}}
{#vertical{#fixed{AS_8613}}} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |
| Imaging-Order | {AS_8613} |

RELATIONS

```
Position#y      >(SIBLING(BodyArea(#dimensions#y +
                           #position#y)) ;
Position#y      >(SIBLING(Footer(#dimensions#y +
                           #position#y)) ;
```

Note: The relations formulae are used to satisfy the constraint that Header frames, Body frames and Footer frames must not overlap. It is also assumed that the bottom of a header frame must be higher up on the page than the top of either a body frame or a footer frame, and that the bottom of a body frame must be higher up on the page than the top of a footer frame.

REQUIRED

--Generic--

| | |
|----------------------------|---------------------------------------|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(FrameH,
FrameC,FrameG))} |
| Position | {#fixed{AS_8613}} |
| Dimensions | {AS_8613} |
| Application-Comments | {"Footer"} |

--Specific--

| | |
|-------------------|-----------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| | fda {N/A} |
| Subordinates | fpda {OBJECT_CLASS_ID_OF(Footer)} |
| | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |

--Specific--

| | |
|------------------------|----------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| | fda {OBJECT_CLASS_ID_OF(Footer)} |
| Position | fpda {N/A} |
| Dimensions | {AS_8613} |
| User-Readable-Comments | {#fixed{AS_8613}} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"Footer"} |

BodyArea

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(FrameB,FrameC,
FrameD,FrameF,
FrameG,FrameH))} |
| Position | {#fixed{AS_8613}} |
| Dimensions | {#horizontal{#fixed{AS_8613}}}
{#vertical{#fixed{AS_8613}}} |
| Application-Comments | {"BodyArea"} |

--Specific--

| | |
|-------------------|--------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(BodyArea)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |

--Specific--

| | |
|------------------------|--------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(BodyArea)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"Body Area"} |

RELATIONS

Position#y > SIBLING(Footer(#dimensions#y +
#position#y));

FrameA

FrameA is a region of the page typically representing a column. The direct subordinates are blocks of content. FrameA is at a fixed position within its superior frame. The dimension orthogonal to the layout path is fixed; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinates.

REQUIRED

--Generic--

| | |
|-------------------------|---------------------------------|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {#fixed{AS_8613}} |
| Dimensions | {#horizontal{fixed,default}} |
| Application-Comments | #vertical(Rule-B)
{"FrameA"} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameA)} |
| Subordinates | {OBJECT_ID_OF(Block)} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Permitted Categories | {AS_8613} |
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |

--Specific--

| | |
|------------------------|------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameA)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| Permitted Categories | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |

| | |
|----------------------|------------|
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"FrameA"} |

FrameB

FrameB is a region of the page, typically representing a number of columns. The direct subordinates may only be frames of type A or I. The position is variable (i.e., determined by a rule). The dimension orthogonal to the layout path is maximum for the position; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinates.

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(cho(FrameA,FrameI))} |
| Position | {#variable{AS_8613}} |
| Dimensions | {#horizontal{fixed
{AS_8613},default}
#vertical{Rule-B}}
{"FrameB"} |
| Application-Comments | |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameB)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |
| Balance | {AS_8613} |

--Specific--

| | |
|------------------------|------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameB)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |

| | |
|----------------------|------------|
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {90,270} |
| Imaging-Order | {AS_8613} |
| Balance | {AS_8613} |
| Application-Comments | {"FrameB"} |

FrameC

FrameC is a region of the page, typically representing an area of variable dimension within a column, such as is needed to contain a paragraph of text or a figure. This provides for varying layout on pages (columns or pages) as the document is edited. The direct subordinates are blocks of content. The position is variable (i.e., determined by a rule). The dimension orthogonal to the layout path is maximum for the position; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinate block(s).

REQUIRED

--Generic--

| | |
|-------------------------|---|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {#variable{AS_8613}} |
| Dimensions | {#horizontal{fixed
{AS_8613},default},
#vertical{Rule-B}} |
| Application-Comments | {"FrameC"} |

--Specific--

| | |
|-------------------|---|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameC)}
{OBJECT_ID_OF(Block)} |
| Subordinates | |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Permitted-Categories | {AS_8613} |

--Specific--

| | |
|--------------|------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameC)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {#horizontal{default}} |

| | |
|------------------------|---------------------|
| User-Readable-Comments | #vertical{AS_8613}) |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"FrameC"}) |
| Permitted-Categories | {AS_8613} |

FrameD

FrameD is a region of the page, typically representing an area of variable dimension within a column, containing a number of items side by side (e.g., text flowing around a picture). The direct subordinates may only be frames of type E. The position is variable (i.e., determined by a rule). The dimension orthogonal to the layout path is maximum for the position; in the direction of the layout path, the dimension is the minimum size needed to contain the first laid out subordinate (e.g., the picture).

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(poss(FrameE))} |
| Position | {#variable{AS_8613}} |
| Dimensions | {#horizontal{default}}
{vertical{Rule-A}} |
| Application-Comments | {"FrameD"} |
| Layout-Path | {0,180} |

--Specific--

| | |
|-------------------|------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameD)} |
| Subordinates | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------------------|
| Resource | {AS_8613} |
| User Readable Comments | {AS_8613} |
| User Visible Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Bindings | {MANIPULATION(PGnum)} |

--Specific--

| | |
|--------------|------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameD)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {#horizontal{default}} |

| | |
|------------------------|-----------------------|
| User Readable Comments | {#vertical{AS_8613}} |
| User Visible Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Imaging Order | {AS_8613} |
| Bindings | {MANIPULATION(PGnum)} |
| Application Comments | {"FrameD"} |

FrameE

FrameE is a region of the page, typically representing some text or a picture, that is side by side with the frames of this type within a superior frame of type D. The direct subordinates are blocks of content. The position is variable (i.e., determined by a rule). The dimension orthogonal to the layout path is the minimum size needed to contain the subordinate block(s). In the direction of the layout path, the dimension is either a fixed dimension or is a computed dimension equal to either the minimum size needed to contain the subordinate block(s) (e.g., picture), or the maximum size for the position (e.g., text).

REQUIRED

--Generic--

| | |
|-------------------------|---|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {#variable position{AS_8613}} |
| Dimensions | {#horizontal{Rule-B,fixed,default},
#vertical{Rule-B}} |
| Permitted-Categories | {AS_8613} |
| Application-Comments | {"FrameE"} |

--Specific--

| | |
|----------------------|---|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameE)}
{OBJECT_ID_OF(Block)} |
| Subordinates | |
| Permitted-Categories | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |

--Specific--

| | |
|--------------|------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameE)} |
| fpda | {N/A} |
| Position | {AS_8613} |

| | |
|------------------------|------------|
| Dimensions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"FrameE"} |

FrameF

Frame F is a region of the page typically used to contain a footnote. The direct subordinates are blocks of content. The frame is positioned within its superior in reverse order at a fixed position from its superior in the direction orthogonal to the layout path and at a variable position in the direction of the layout path. The dimension orthogonal to the layout path is maximum for the position; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinate blocks.

REQUIRED

--Generic--

| | |
|-------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {#variable{#fill
order(reversed)},#offset{AS_8613},
#separation{AS_8613},
#alignment{AS_8613}}
{#horizontal{default}
#vertical{Rule-B}} |
| Dimensions | {AS_8613} |
| Permitted-Categories | {AS_8613} |
| Application-Comments | {"FrameF"} |

--Specific--

| | |
|----------------------|--|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| Subordinates | fda {N/A} |
| Permitted-Categories | fpda {OBJECT_CLASS_ID_OF(FrameF) }
{OBJECT_OF(Block)} |
| | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |

--Specific--

| | |
|--------------|---------|
| Object-Type | {frame} |
| Object-Class | CASE |

| | | |
|------------------------|------|--|
| | fda | {OBJECT_CLASS_ID_OF(FrameF) } |
| | fpda | {N/A} |
| Position | | {AS_8613} |
| Dimensions | | {#horizontal{default}
#vertical{AS_8613}} |
| User-Readable-Comments | | {AS_8613} |
| User-Visible-Name | | {AS_8613} |
| Transparency | | {AS_8613} |
| Colour | | {AS_8613} |
| Border | | {AS_8613} |
| Imaging-Order | | {AS_8613} |
| Application-Comments | | {"FrameF"} |

FrameG

FrameG is a region of the page, typically representing a set of pieces of content placed at defined positions. This provides for complex, fixed, relatively positioned pieces of content, including overlapping pieces of content (e.g., overlapping pictures or pictures and text). The direct subordinates are blocks of content. The position relative to the superior is fixed; the dimensions are also fixed.

REQUIRED

--Generic--

| | |
|-------------------------|------------------------|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {#fixed{AS_8613}} |
| Dimensions | {#horizontal{AS_8613}} |
| | {#vertical{AS_8613}} |
| Application-Comments | {"FrameG"} |

--Specific--

| | |
|-------------------|-----------------------------------|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| | fda {N/A} |
| | fpda {OBJECT_CLASS_ID_OF(FrameG)} |
| Subordinates | {OBJECT_ID_OF(Block)} |

PERMITTED

--Generic--

| | |
|----------------------------|--------------|
| Generator-For-Subordinates | {seq(Block)} |
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Permitted-Categories | {AS_8613} |

--Specific--

| | |
|------------------------|----------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| | fda {OBJECT_CLASS_ID_OF(FrameG)} |
| | fpda {N/A} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |

| | |
|----------------------|------------|
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"FrameG"} |
| Permitted-Categories | {AS_8613} |

FrameH

FrameH is a region of the page, typically representing a variable piece of logical information in the header or footer area of a page (e.g., current chapter number). The direct subordinates are blocks of content. The frame, in all cases, specifies that its content is derived from the use of the attribute "logical source" referring to a logical object of "header or footer content." The position is variable (i.e., determined by a rule.) The dimension orthogonal to the layout path is maximum for the position; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinate blocks.

REQUIRED

--Generic--

| | |
|-------------------------|---|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Position | {variable position{AS_8613}} |
| Dimensions | {#horizontal{default}
#vertical{Rule-B}} |
| Logical-Source | {OBJECT_CLASS_ID_OF(Hdr-
or-Ftr-Content) } |
| Application-Comments | {"FrameH"} |

--Specific--

| | |
|-------------------|---|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(FrameH) }
{OBJECT_ID_OF(Block) } |
| Subordinates | |

PERMITTED

--Generic--

| | |
|----------------------------|----------------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {AS_8613} |
| Generator-for-Subordinates | {iter(Block) } |

--Specific--

| | |
|--------------|-------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(FrameH) } |
| fpda | {N/A} |
| Position | {AS_8613} |

| | |
|------------------------|--|
| Dimensions | {#horizontal{default}
#vertical{AS_8613}} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Border | {AS_8613} |
| Layout-Path | {AS_8613} |
| Application-Comments | {"FrameH"} |

FrameI

Frame I: A region of the page typically representing a column. The frame may contain any substructure of further frames of any of the types C, F, or G. Blocks are not permitted directly subordinate to FrameI. FrameI is at a fixed position within its superior frame. The dimension orthogonal to the layout path is fixed; in the direction of the layout path, the dimension is the minimum size needed to contain the subordinates.

REQUIRED

--Generic--

| | |
|----------------------------|--|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Generator-for-Subordinates | {iter(any(FrameC,
FrameF,FrameG))}
{#fixed{AS_8613}} |
| Position | {#horizontal{fixed, default},
#vertical{Rule-B}} |
| Dimensions | |
| Application-Comments | {"FrameI"} |

--Specific--

| | |
|-------------------|--|
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| | fda {N/A} |
| Subordinates | fpda {OBJECT_CLASS_ID_OF(FrameI)}
{AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Border | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Layout-Path | {90,270} |

--Specific--

| | |
|------------------------|----------------------------------|
| Object-Type | {frame} |
| Object-Class | CASE |
| | fda {OBJECT_CLASS_ID_OF(FrameI)} |
| Position | fpda {N/A} |
| Dimensions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |

| | |
|----------------------|------------|
| User-Visible-Name | {AS_8613} |
| Border | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Layout-Path | {90,270} |
| Imaging-Order | {AS_8613} |
| Application-Comments | {"FrameI"} |

Frame J

Frame J is a single basic frame to contain header or footer contents. This is provided for compatibility with the CCITT Recommendation T.502.

REQUIRED

--Generic--

| | |
|-------------------------|-------------|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Logical-Source | {AS_8613} |
| Application-Comments | {"Frame J"} |

--Specific--

| | |
|-------------------|-------------------------------|
| Object-Class | {OBJECT_CLASS_ID_OF(FRAME J)} |
| Subordinates | {OBJECT_ID_OF(Block)} |
| Object-Identifier | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-------------------|
| Position | {#fixed{AS_8613}} |
| Dimensions | {#fixed{AS_8613}} |
| User-visible-name | {AS_8613} |
| User-readable-comments | {AS_8613} |

--Specific--

| | |
|------------------------|-------------------|
| Object-Type | {frame} |
| Position | {AS_8613} |
| Dimensions | {#fixed{AS_8613}} |
| User-visible-name | {AS_8613} |
| User-readable-comments | {AS_8613} |
| Application-Comments | {"Frame J"} |
| Layout-Path | {270} |

RELATIONS

FrameJ.2#Position#y > FrameK.1#Position#y +
FrameK.1#Dimensions#vertical

Note: the relations formulae are used to satisfy the constraint that Header frames, Body frames and Footer frames must not overlap. It is also assumed that the bottom of a header frame must be higher up on the page than the top of either a body frame or a footer frame, and that the bottom of a body frame must be higher up on the page than the top of a footer frame.

Frame K

Frame K is a single basic frame to represent the body area of a page. This is provided for compatibility with the CCITT Recommendation T.502.

REQUIRED

--Generic--

| | |
|-------------------------|-------------|
| Object-Type | {frame} |
| Object-Class-Identifier | {AS_8613} |
| Application-Comments | {"Frame K"} |

--Specific--

| | |
|-------------------|-------------------------------|
| Object-Class | {OBJECT_CLASS_ID_OF(FRAME K)} |
| Subordinates | {OBJECT_ID_OF(Block)} |
| Object-Identifier | {AS_8613} |

PERMITTED

--Generic--

| | |
|------------------------|-------------------|
| Position | {#fixed{AS_8613}} |
| Dimensions | {#fixed{AS_8613}} |
| User-visible-name | {AS_8613} |
| User-readable-comments | {AS_8613} |

--Specific--

| | |
|------------------------|-------------------|
| Object-Type | {frame} |
| Position | {AS_8613} |
| Dimensions | {#fixed{AS_8613}} |
| User-visible-name | {AS_8613} |
| User-readable-comments | {AS_8613} |
| Application-Comments | {"Frame K"} |
| Layout-Path | {270} |

RELATIONS

FrameK.1#Position#y > FrameJ.1#Position#y +
FrameJ.1#Dimensions#vertical

Note: the relations formulae are used to satisfy the constraint that Header frames, Body frames and Footer frames must not overlap. It is also assumed that the bottom of a header frame must be higher up on the page than the top of either a body frame or a footer frame, and that the bottom of a body frame must be higher up on the page than the top of a footer frame.

Block

REQUIRED

--Generic--

| | |
|----------------------------|-----------|
| Object-Type | {block} |
| Object-Class-Identifier | {AS_8613} |
| Content-Architecture-Class | {AS_8613} |
| Application-Comments | {"Block"} |

--Specific--

| | |
|----------------------------|-----------------------------|
| Content-Architecture-Class | {AS_8613} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| Object-Identifier | {AS_8613} |
| Object-Class | CASE |
| fda | {N/A} |
| fpda | {OBJECT_CLASS_ID_OF(Block)} |

PERMITTED

--Generic--

| | |
|------------------------|-----------|
| Resource | {AS_8613} |
| Content-Portions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Presentation-Style | {AS_8613} |

--Specific--

| | |
|------------------------|-----------------------------|
| Object-Type | {block} |
| Object-Class | CASE |
| fda | {OBJECT_CLASS_ID_OF(Block)} |
| fpda | {N/A} |
| Position | {AS_8613} |
| Dimensions | {AS_8613} |
| Content-Generator | {<content-generator-3>} |
| Content-Portions | {AS_8613} |
| User-Readable-Comments | {AS_8613} |
| User-Visible-Name | {AS_8613} |
| Transparency | {AS_8613} |
| Colour | {AS_8613} |
| Border | {AS_8613} |
| Presentation-Style | {AS_8613} |
| Application-Comments | {"Block"} |

2.2.5 CONTENT-ARCHITECTURE

2.2.5.1 Character-Content-Architecture

For the purposes of conformance, the character content architecture section presents all character content attributes in terms of default, basic and non-basic values. Defaults are presented here where they can be described in simple terms. In three cases where the values are determined algorithmically from other attribute values, reference is made to the description in IS 8613. Basic and non-basic values are supplied for each attribute. In addition, the domain of applicability for each attribute is also defined in terms of classes of content architectures. Particular areas where attributes of the standard are restricted for BASIC systems include character set support and line spacing.

Presentation-Attributes

| | | |
|-----------------------|-----------|--|
| Alignment | BASIC | {start-aligned end-aligned centered justified} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {start-aligned} |
| | CLASS | {cf cp cfp} |
| Character-Fonts | { | |
| {Font-Size | BASIC | {NONE} |
| | NON-BASIC | {ANY} |
| | DEFAULT | {NONE} |
| | CLASS | {cf cp cfp}} |
| {Font-Identifier | BASIC | {NONE} |
| | NON-BASIC | {AS_8613} |
| | DEFAULT | {NONE} |
| | CLASS | {cf cp cfp}} |
| } | | |
| Character-Orientation | BASIC | {0 90 180 270} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Character-Path | BASIC | {0 90 180 270} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |

| | |
|--------------------------|--|
| Character-Spacing | BASIC {AS_8613}
NON-BASIC {NONE}
DEFAULT {120}
CLASS {cf cp cfp} |
| Code-Extension-Announcer | BASIC {AS_8613}
NON-BASIC {NONE}
DEFAULT {AS_8613}
CLASS {cf cp cfp} |
| First-Line-Offset | BASIC {AS_8613}
NON-BASIC {NONE}
DEFAULT {0}
CLASS {cf cp cfp} |
| Formatting-Indicator | BASIC {yes no}
NON-BASIC {NONE}
DEFAULT {NONE}
CLASS {cf cfp} |
| Graphic-Character-Sets | BASIC {
{04/00,SO}
/*ISO 6937/2 Primary Set as G0*/
{02/09 06/12,SI}
/*ISO 6937/2 Supplementary Set as G2*/
{04/02,SO}
/*ISO 8859/1 Primary Set as G0*/
{02/13 04/01,SI}
/*ISO 8859/1 Supplementary Set as G2*/
}
NON-BASIC {AS_8613}
DEFAULT {{(04/00,SO)
(02/09 06/12,SI)}}
CLASS {cf cp cfp} |
| Character-Subrepertoire | BASIC {
1 /*Full repertoire*/
3 /*Teletex subrepertoire*/
8 /*8859/1 subrepertoire*/
}
NON-BASIC {AS_8613}
DEFAULT {8}
CLASS {cf cp cfp} |
| Graphic-Rendition | BASIC {AS_8613}
NON-BASIC {NONE}
DEFAULT {0} |

```

        CLASS      {cf|cp|cfp}

Indentation          BASIC      {AS_8613}
                     NON-BASIC {NONE}
                     DEFAULT   {0}
                     CLASS     {cp|cfp}

Initial-Offset       {
    {Horizontal-Coordinate
        BASIC      {AS_8613}
        NON-BASIC {NONE}
        DEFAULT   {AS_8613}
        CLASS     {cf|cfp}}
    {Vertical-Coordinate
        BASIC      {AS_8613}
        NON-BASIC {NONE}
        DEFAULT   {AS_8613}
        CLASS     {cf|cfp}}
    }

Itemization          {
    {Identifier-Alignment
        BASIC      {no-itemization|
                      start-aligned|
                      end-aligned}
        NON-BASIC {NONE}
        DEFAULT   {no-itemization}
        CLASS     {cf|cp|cfp}}
    {Identifier-Start-Offset
        BASIC      {AS_8613}
        NON-BASIC {NONE}
        DEFAULT   {AS_8613}
        CLASS     {cf|cp|cfp}}
    {Identifier-End-Offset
        BASIC      {AS_8613}
        NON-BASIC {NONE}
        DEFAULT   {0}
        CLASS     {cf|cp|cfp}}
    }

Kerning-Offset       {
    {Start-Edge-Offset  BASIC      {AS_8613}
                     NON-BASIC {NONE}
                     DEFAULT   {0}
                     CLASS     {cf|cp|cfp}}
    {End-Edge-Offset   BASIC      {AS_8613}
                     NON-BASIC {NONE}
                     DEFAULT   {0}
                     CLASS     {cf|cp|cfp}}
}

Line-Layout-Table    {
    {Tab-Reference   BASIC      {AS_8613}
}

```

| | |
|---------------------------|--|
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |
| | CLASS {cf cp cfp}) |
| {Tab-Position | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |
| | CLASS {cf cp cfp}) |
| {Alignment | BASIC {start-aligned end-aligned centered aligned-around}) |
| | NON-BASIC {NONE} |
| | DEFAULT {start-aligned}) |
| | CLASS {cf cp cfp}) |
| {Alignment-String | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |
| | CLASS {cf cp cfp}) |
| | } |
| Line-Progression | BASIC {90 270} |
| | NON-BASIC {NONE} |
| | DEFAULT {270} |
| | CLASS {cf cp cfp}) |
| Line-Spacing | BASIC {100 150 200 300 400} |
| | NON-BASIC {NONE} |
| | DEFAULT {200} |
| | CLASS {cf cp cfp}) |
| Orphan-Size | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |
| | CLASS {cp cfp}) |
| Pairwise-Kerning | BASIC {yes no} |
| | NON-BASIC {NONE} |
| | DEFAULT {no} |
| | CLASS {cf cp cf}) |
| Proportional-Line-Spacing | BASIC {yes no} |
| | NON-BASIC {NONE} |
| | DEFAULT {no} |
| | CLASS {cp cfp}) |
| Widow-Size | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |
| | CLASS {cp cfp}) |

Control-Functions

Break-Permitted-Here

| | |
|---------|-----------------------|
| /*BPH*/ | BASIC {NO-PARAMETERS} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |
| | CLASS {cp cfp} |

Carriage-Return

| | |
|--------|-----------------------|
| /*CR*/ | BASIC {NO-PARAMETERS} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |
| | CLASS {cf cp cfp} |

Graphic-Character-Composition

| | |
|---------|-------------------|
| /*GCC*/ | BASIC {0 1 2} |
| | NON-BASIC {NONE} |
| | DEFAULT {0} |
| | CLASS {cf cp cfp} |

Character-Position-Backward

| | |
|---------|------------------|
| /*HPB*/ | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {120} |
| | CLASS {cf cfp} |

Character-Position-Relative

| | |
|---------|------------------|
| /*HPR*/ | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {120} |
| | CLASS {cf cfp} |

No-Justify

| | |
|---------|------------------|
| /*JFY*/ | BASIC {0} |
| | NON-BASIC {NONE} |
| | DEFAULT {0} |
| | CLASS {cf cfp} |

Line-Feed

| | |
|--------|-----------------------|
| /*LF*/ | BASIC {NO-PARAMETERS} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |
| | CLASS {cf cp cfp} |

No-Break-Here

| | |
|---------|-----------------------|
| /*NBH*/ | BASIC {NO-PARAMETERS} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |
| | CLASS {cp cfp} |

Partial-Line-Down

| | |
|---------|-----------------------|
| /*PLD*/ | BASIC {NO-PARAMETERS} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |

| | | |
|---|-----------|--|
| | CLASS | {cf cp cfp} |
| Partial-Line-Up
/*PIU*/ | BASIC | {NO-PARAMETERS} |
| | NON-BASIC | {N/A} |
| | DEFAULT | {N/A} |
| | CLASS | {cf cp cfp} |
| Parallel-Texts
/*PTX*/ | BASIC | {0 1 3} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cp cfp} |
| Set-Additional-Character-Separation
/*SACS*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cfp} |
| Set-Character-Spacing
/*SCS*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {120} |
| | CLASS | {cf cp cfp} |
| Select-Graphic-Rendition
/*SGR*/ | BASIC | {0 1 2 3 4 5 6 7 9
10 11 12 13 14 15
16 17 18 19 21 22
23 24 25 27 29} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Select-Character-Spacing
/*SHS*/ | BASIC | {0 1 2 3} |
| | NON-BASIC | {4} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Set-Line-Spacing
/*SLS*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {200} |
| | CLASS | {cf cp cfp} |
| Start-Of-String
/*SOS*/ | BASIC | {NO-PARAMETERS} |
| | NON-BASIC | {N/A} |
| | DEFAULT | {N/A} |
| | CLASS | {cfp} |
| Space
/*SP*/ | BASIC | {NO-PARAMETERS} |
| | NON-BASIC | {N/A} |

| | | |
|----------------------------------|-----------|-----------------|
| | DEFAULT | {N/A} |
| | CLASS | {cf cp cfp} |
| Set-Reduced-Character-Separation | | |
| /*SRCS*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Start-Reverse-String | | |
| /*SRS*/ | BASIC | {0 1} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Set-Space-Width | | |
| /*SSW*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {NONE} |
| | CLASS | {cf cfp} |
| String-Terminator | | |
| /*ST*/ | BASIC | {N/A} |
| | NON-BASIC | {N/A} |
| | DEFAULT | {N/A} |
| | CLASS | {cfp} |
| Selective-Tabulation | | |
| /*STAB*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {NONE} |
| | CLASS | {cf cp cfp} |
| Substitute-Character | | |
| /*SUB*/ | BASIC | {NO-PARAMETERS} |
| | NON-BASIC | {N/A} |
| | DEFAULT | {N/A} |
| | CLASS | {cf cp cfp} |
| Select-Line-Spacing | | |
| /*SVS*/ | BASIC | {0 1 2 3 4 9} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0} |
| | CLASS | {cf cp cfp} |
| Line-Position-Backward | | |
| /*VPB*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {100} |
| | CLASS | {cf cp cfp} |
| Line-Position-Relative | | |
| /*VPR*/ | BASIC | {AS_8613} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {100} |

CLASS {cf|cp|cfp}

Code-Extension-Control

BASIC {AS_8613}
NON-BASIC {NONE}
DEFAULT {NO-DEFAULT}
CLASS {cf|cp|cfp}

Content-Portion-Attributes

Type-of-coding BASIC {{2 8 3 6 0}}
NON-BASIC {NONE}
DEFAULT {{2 8 3 6 0}}
CLASS {cf|cp|cfp}

2.2.5.2 Raster-Graphics-Content-Architecture

The Raster Graphics Content Architecture permits the inclusion in documents of content portions containing raster graphics which represent a two-dimensional pictoral image in the form of a rectangular two-dimensional array of picture elements (pels). The content architecture is as specified in part 7 of ISO 8613.

The Raster Graphics Content Architecture defines a formatted processable content architecture. This content architecture class supports Presentation Attributes and Content Portion Attributes. Each attribute comprising this content architecture is specified in subsequent sections in a form that has been defined previously. For each attribute, permissible values are differentiated as BASIC, NON-BASIC and DEFAULT.

Presentation Attributes

These attributes specify constraints and initial conditions relating to the layout and imaging of a raster graphics content portion. This content architecture class supports Shared Presentation Attributes and Logical Presentation Attributes.

| | |
|---------------------|-----------------------|
| Pel-Path | BASIC { 0 90 180 270} |
| | NON-BASIC {NONE} |
| | DEFAULT {0} |
| Line-Progression | BASIC {90 270} |
| | NON-BASIC {NONE} |
| | DEFAULT {270 } |
| Pel-Spacing { | |
| {Length | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {4}} |
| {Pel-Spaces | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {1}}} |
| } | |
| Spacing-Ratio { | |
| {Line-Spacing-Value | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {1}}} |
| {Pel-Spacing-Value | BASIC {AS_8613} |
| | NON-BASIC {NONE} |

```
        DEFAULT {1})  
    }  
  
Clipping {  
    (First-Pair-X-Coordinate  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {AS_8613}  
    (First-Pair-Y-Coordinate  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {AS_8613}  
    (Second-Pair-X-Coordinate  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {AS_8613}  
    (Second-Pair-Y-Coordinate  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {AS_8613}  
    }
```

Image-Dimensions

```
        BASIC {CHOICE-OF  
    (Width-Controlled {SEQUENCE-OF  
        (Minimum-Width BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
    (Preferred-Width  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
}}  
{Height-Controlled {SEQUENCE-OF  
    (Minimum-Height  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
    (Preferred-Height  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
}}  
{Area-Controlled {SEQUENCE-OF  
    (Minimum-Width BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
    (Preferred-Width  
        BASIC {AS_8613}  
        NON-BASIC {NONE}  
        DEFAULT {NO-DEFAULT}})  
    (Minimum-Height
```

```

        BASIC      {AS_8613}
        NON-BASIC {NONE}
        DEFAULT   {NO-DEFAULT} }

{Preferred-Height
    BASIC      {AS_8613}
    NON-BASIC {NONE}
    DEFAULT   {NO-DEFAULT} }

{Aspect-Ratio-Flag
    BASIC     {variable|fixed}
    NON-BASIC {NONE}
    DEFAULT   {NO-DEFAULT} }

}

{Automatic    BASIC      {NO-PARAMETERS}
    NON-BASIC {N/A}
    DEFAULT   {N/A} }

}

NON-BASIC {NONE}
DEFAULT   {AUTOMATIC}

```

Content-Portion-Attributes

| | |
|-------------------------|---|
| Number-of-Pels-Per-Line | BASIC {AS_8613}
NON_BASIC {NONE}
DEFAULT {NONE} |
| Number-of-Lines | BASIC {AS_8613}
NON_BASIC {NONE}
DEFAULT {NONE} |
| Type-of-coding | BASIC {{2 8 3 7 0}
/*CCITT T.6*/
{2 8 3 7 1}
/*CCITT T.4 1-Dimensional*/
{2 8 3 7 2}
/*CCITT T.4 2-Dimensional*/
{2 8 3 7 3}}
/*Bitmap*/
NON-BASIC {NONE}
DEFAULT {{2 8 3 7 3}} |
| Compression | BASIC {compressed
uncompressed}
NON-BASIC {NONE}
DEFAULT {compressed} |

Geometric Graphics Content Architecture

The Geometric Graphics Content Architecture permits the inclusion in documents of content portions containing graphics primitives such as lines, markers, filled areas, graphic text, patterns and etc. The content architecture is as specified in part 8 of ISO 8613. It is based on ISO 8632, Computer Graphics Metafile (OGM).

The Geometric Graphics Content Architecture defines a formatted processable content architecture. This content architecture class supports Presentation Attributes, Content Architecture Class Attributes and Content Portion Attributes. Each attribute comprising this content architecture is specified in subsequent sections in a form that has been defined previously. For each attribute, permissible values are differentiated as BASIC, NON-BASIC and DEFAULT.

Presentation Attributes

These attributes specify constraints and initial conditions relating to the layout and imaging of a geometric graphics content portion. This content architecture class supports Presentation Attributes.

The default values for the presentation attributes are specified so as to be consistent with those specified in the Metafile Defaults in clause 6 of ISO 8632/1. No private values are permitted for any of the presentation attributes.

Default-Bundle-Representations

```
Line-Bundle-Representation {
    {Bundle-Index      BASIC   {1,2,3,4,5}
     NON-BASIC {NONE}
     DEFAULT   {N/A}}
    {Line-Type        BASIC   {solid,
                                dash,
                                dot,
                                dash-dot,
                                dash-dot-dot}
     NON-BASIC {NONE}
     DEFAULT   {N/A}}
    {Line-Width       CASE Line-Width-Specification-Mode
                    absolute  BASIC   {.001*max-vdcx,
                                         .001*max-vdcx,
                                         .001*max-vdcx,
                                         .001*max-vdcx,
                                         .001*max-vdcx}
                    NON-BASIC {NONE}}
```

```

        DEFAULT {N/A}
scaled      BASIC {1.,1.,1.,1.,1.}
        NON-BASIC {NONE}
        DEFAULT {N/A}}
{Line-Colour CASE Colour-Specification-Mode
indexed    BASIC {1,1,1,1,1}
        NON-BASIC {NONE}
        DEFAULT {N/A}
direct     BASIC {foreground,
                  foreground,
                  foreground,
                  foreground,
                  foreground}
        NON-BASIC {NONE}
        DEFAULT {N/A}}}
}

```

```

Marker-Bundle-Representation {
    (Bundle-Index      BASIC {1,2,3,4,5}
        NON-BASIC {NONE}
        DEFAULT {N/A}}
    (Marker-Type       BASIC {dot,
                                plus,
                                asterisk,
                                circle,
                                cross}
        NON-BASIC {NONE}
        DEFAULT {N/A}}
    (Marker-Size       CASE Marker-Size-Specification-Mode
        absolute     BASIC {0.01*max-vdcx,
                            0.01*max-vdcx,
                            0.01*max-vdcx,
                            0.01*max-vdcx,
                            0.01*max-vdcx}
        NON-BASIC {NONE}
        DEFAULT {N/A}
        scaled      BASIC {1.,1.,1.,1.,1.}
        NON-BASIC {NONE}
        DEFAULT {N/A}}
    (Marker-Colour     CASE Colour-Specification-Mode
        indexed     BASIC {1,1,1,1,1}
        NON-BASIC {NONE}
        DEFAULT {N/A}
        direct      BASIC {foreground,
                            foreground,
                            foreground,
                            foreground,
                            foreground}
        NON-BASIC {NONE}
        DEFAULT {N/A}}}

```

```

}

Text-Bundle-Representation {
    {Bundle-Index      BASIC     {1,2}
     NON-BASIC {NONE}
     DEFAULT   {N/A}}}

    {(Text-Font-Index BASIC     {1,1}
     NON-BASIC {NONE}
     DEFAULT   {N/A}}}

    {(Text-Precision  BASIC     {string,character}
     NON-BASIC {NONE}
     DEFAULT   {N/A}}}

    {(Character-Expansion-Factor
        BASIC     {1.0,0.7}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}}

    {(Character-Spacing
        BASIC     {0.0,0.0}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}}

    {(Text-Colour      CASE Colour-Specification-Mode
        indexed       BASIC     {1,1}
                      NON-BASIC {NONE}
                      DEFAULT   {N/A}}
        direct        BASIC     {foreground,
                                  foreground}
                      NON-BASIC {NONE}
                      DEFAULT   {N/A}}}

}

Filled-Area-Bundle-Representation {
    {(Fill-Bundle-Index
        BASIC     {1,2,3,4,5}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}}

    {(Interior-Style
        BASIC     {hollow,
                    hatch,
                    hatch,
                    hatch,
                    hatch})
        NON-BASIC {NONE}
        DEFAULT   {N/A}}}

    {(Fill-Colour      CASE Colour-Specification-Mode
        indexed       BASIC     {1,1,1,1,1}
                      NON-BASIC {NONE}
                      DEFAULT   {N/A}}
        direct        BASIC     {foreground,
                                  foreground,
                                  foreground,
                                  foreground,
                                  foreground}}}

```

```

foreground}
NON-BASIC {NONE}
DEFAULT {N/A}}
BASIC {horizontal,
       horizontal,
       vertical,
       positive-slope,
       negative-slope}

NON-BASIC {NONE}
DEFAULT {N/A}
BASIC {1,1,1,1,1}
NON-BASIC {NONE}
DEFAULT {N/A}}
}

Edge-Bundle-Representation {
  {Bundle-Index}
    BASIC {1,2,3,4,5}
    NON-BASIC {NONE}
    DEFAULT {N/A}}
  {Edge-Type}
    BASIC {solid,
           dash,
           dot,
           dash-dot,
           dash-dot-dot}
    NON-BASIC {NONE}
    DEFAULT {N/A}}
  {Edge-Width}
    CASE Edge-Width-Specification-Mode
      absolute BASIC {0.001*max-vdcx,
                      0.001*max-vdcx,
                      0.001*max-vdcx,
                      0.001*max-vdcx,
                      0.001*max-vdcx}
      NON-BASIC {N/A}
      DEFAULT {NONE}}
      scaled BASIC {1.,1.,1.,1.,1.}
      NON-BASIC {NONE}
      DEFAULT {N/A}}
  {Edge-Colour}
    CASE Colour-Specification-Mode
      indexed BASIC {1,1,1,1,1}
      NON-BASIC {NONE}
      DEFAULT {N/A}
      direct BASIC {foreground,
                     foreground,
                     foreground,
                     foreground,
                     foreground}
      NON-BASIC {NONE}
      DEFAULT {N/A}}
}
}

Default-Pattern-Representation {

```

```

{Pattern-Table-Index
    BASIC      {1}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
{Number-Of-Columns BASIC      {1}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
{Number-Of-Rows   BASIC      {1}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
{Local-Colour-Precision
    BASIC      {0}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
{Colour-Array     Case Colour-Specification-Mode
    indexed      BASIC      {1}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
    direct      BASIC      {foreground}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
}

Default-Colour-Representation {
/* See Note 1 */
{Start-Index      BASIC      {2}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
{Colour-List      BASIC      {
    /* Red */      {255, 0, 0},
    /* Green */     {0, 255, 0},
    /* Blue */      {0, 0, 255},
    /* Yellow */     {255, 255, 0},
    /* Magenta */    {255, 0, 255},
    /* Cyan */       {0, 255, 255},
    /* Black */      {0, 0, 0},
    /* White */      {255, 255, 255}}
    NON-BASIC {NONE}
    DEFAULT   {N/A}}
}

/*
 * Note 1  Colour Table defaults for colour indices 0 and 1
 *          are defined to the nominal "background" and
 *          nominal "foreground" colours, respectively.
 */

```

Geometric-Graphics-Encoding-Announcer

| | |
|----------|---------------------------|
| VDC-Type | BASIC {integer real} |
| | NON-BASIC {NONE} |
| | DEFAULT {integer} |

| | |
|---------------------------|----------------------------|
| Integer-Precision | BASIC {16 32} |
| | NON-BASIC {NONE} |
| | DEFAULT {16} |
| Real-Precision | BASIC {{0,9,23} {1,16,16}} |
| | NON-BASIC {NONE} |
| | DEFAULT {{1,16,16}} |
| Index-Precision | BASIC {8 16} |
| | NON-BASIC {NONE} |
| | DEFAULT {16} |
| Colour-Precision | BASIC {8 16} |
| | NON-BASIC {NONE} |
| | DEFAULT {8} |
| Colour-Index-Precision | BASIC {8 16} |
| | NON-BASIC {NONE} |
| | DEFAULT {8} |
| Maximum-Colour-Index | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |
| | DEFAULT {63} |
| Colour-Value-Extent { | |
| {Minimum-Colour-Direct | |
| BASIC {ANY colour-direct} | |
| NON-BASIC {NONE} | |
| DEFAULT {{0,0,0}}} | |
| {Maximum-Colour-Direct | |
| BASIC {ANY colour-direct} | |
| NON-BASIC {NONE} | |
| DEFAULT {{255,255,255}}} | |
| } | |
| Colour-Selection-Mode | |
| | BASIC {indexed direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {indexed} |
| VDC-Integer-Precision | |
| | BASIC {16 32} |
| | NON-BASIC {NONE} |
| | DEFAULT {16} |
| VDC-Real-Precision | BASIC {{0,9,23} {1,16,16}} |
| | NON-BASIC {NONE} |
| | DEFAULT {{1,16,16}} |

Line-Rendition

Line-Width-Specification-Mode

| | |
|-----------|-------------------|
| BASIC | {absolute scaled} |
| NON-BASIC | {NONE} |
| DEFAULT | {scaled} |

| | |
|-------------------|-------------------|
| Line-Bundle-Index | BASIC {ANY INDEX} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |

| | |
|-----------|--|
| Line-Type | BASIC {solid,
dash,
dot,
dash-dot,
dash-dot-dot} |
| | NON-BASIC {NONE} |
| | DEFAULT {solid} |

Line-Width

| | |
|------------------------------------|---------------------------|
| CASE Line-Width-Specification-Mode | |
| absolute | BASIC {ANY POSITIVE vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.001*max-vdcx} |
| scaled | BASIC {ANY POSITIVE real} |
| | NON-BASIC {NONE} |
| | DEFAULT {1.0} |

Line-Colour

| | |
|--------------------------------|---------------------------|
| CASE Colour-Specification-Mode | |
| indexed | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |
| direct | BASIC {ANY colour-direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {foreground} |

| | |
|--------------------------|-------------------------|
| Line-Aspect-Source-Flags | { |
| (Line-Type-ASF BASIC | {bundled
individual} |
| | NON-BASIC {NONE} |
| | DEFAULT {individual}} |
| (Line-Width-ASF BASIC | {bundled
individual} |
| | NON-BASIC {NONE} |
| | DEFAULT {individual}} |
| (Line-Colour-ASF BASIC | {bundled
individual} |
| | NON-BASIC {NONE} |
| | DEFAULT {individual}} |

Line-Bundle-Specifications

```
/* Any bundle consisting of parameters as for individual */
    BASIC      {AS_8613}
    NON-BASIC  {NONE}
    DEFAULT    {N/A}
```

Marker-Rendition

Marker-Size-Specification-Mode

```
BASIC      {absolute|scaled}
NON-BASIC  {NONE}
DEFAULT    {scaled}
```

```
Marker-Bundle-Index BASIC      {ANY INDEX}
NON-BASIC  {NONE}
DEFAULT    {1}
```

```
Marker-Type      BASIC      {dot|
                             plus|
                             asterisk|
                             circle|
                             cross}
NON-BASIC  {NONE}
DEFAULT    {asterisk}
```

Marker-Size

CASE Marker-Size-Specification-Mode

```
absolute  BASIC      {ANY POSITIVE vdc}
NON-BASIC {NONE}
DEFAULT   {0.01*max-vdcx}
scaled    BASIC      {ANY POSITIVE real}
NON-BASIC {NONE}
DEFAULT   {1.0}
```

Marker-Colour

CASE Colour-Specification-Mode

```
indexed   BASIC      {ANY colour-index}
NON-BASIC {NONE}
DEFAULT   {1}
direct    BASIC      {ANY colour-direct}
NON-BASIC {NONE}
DEFAULT   {foreground}
```

Marker-Aspect-Source-Flags

```
{Marker-Type-ASF BASIC      {
                           bundled
                           individual}
NON-BASIC {NONE}
DEFAULT  {individual}}
{Marker-Size-ASF BASIC      {
                           bundled
                           individual}
NON-BASIC {NONE}
DEFAULT  {individual}}
{Marker-Colour-ASF BASIC {bundled
```

```
           individual)
NON-BASIC {NONE}
DEFAULT   {individual})
}
```

Marker-Bundle-Specifications

```
/* Any bundle consisting of parameters as for individual */
    BASIC   {AS_8613}
    NON-BASIC {NONE}
    DEFAULT  {N/A}
```

Text-Rendition

| | |
|-----------|------------------|
| Font-List | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |

| | |
|----------------------|---|
| Character-Set-List { | |
| Character-Set-Type | |
| BASIC | {94-character-G
-set
96-character-G
-set} |
| NON-BASIC | {NONE} |
| DEFAULT | {94-character-G
-set}) |

{Designation-Sequence-Tail

| | |
|-----------|--------|
| BASIC | {4/1 |
| | 4/0 |
| | 4/2} |
| NON-BASIC | {NONE} |
| DEFAULT | {4/1}) |

```
}
```

Character-Coding-Announcer

| | |
|-----------|-------------------------------|
| BASIC | {basic-7-bit
basic-8-bit} |
| NON-BASIC | {NONE} |
| DEFAULT | {basic-7-bit} |

| | |
|-------------------|-------------------|
| Text-Bundle-Index | BASIC {ANY index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |

| | |
|-----------------|-------------------|
| Text-Font-Index | BASIC {ANY index} |
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |

| | |
|----------------|---|
| Text-Precision | BASIC {string
character
stroke} |
| | NON-BASIC {NONE} |

| | |
|--------------------------------|--|
| | DEFAULT {string} |
|
Character-Expansion-Factor | |
| | BASIC {ANY POSITIVE real} |
| | NON-BASIC {NONE} |
| | DEFAULT {1.0} |
|
Character-Spacing | |
| | BASIC {ANY real} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.0} |
|
Text-Colour | |
| CASE Colour-Specification-Mode | |
| indexed | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |
| direct | BASIC {ANY colour-direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {foreground} |
|
Character-Height | |
| | BASIC {ANY POSITIVE vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.01*max-vdcx} |
|
Character-Orientation { | |
| {X-Character-Up-Component | |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0}} |
| {Y-Character-Up-Component | |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {1}} |
| {X-Character-Base-Component | |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {1}} |
| {Y-Character-Base-Component | |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0}} |
| } | |
|
Text-Path | |
| | BASIC {right
left
up
down} |
| | NON-BASIC {NONE} |
| | DEFAULT {right} |
|
Text-Alignment { | |
| (Horizontal-Alignment | |

```

        BASIC      {normal|
                      left|
                      center|
                      right|
                      continuous}
        NON-BASIC {NONE}
        DEFAULT   {normal} }

(Vertical-Alignment
    BASIC      {normal|
                      left|
                      center|
                      right|
                      continuous}
    NON-BASIC {NONE}
    DEFAULT   {normal} }

(Continuous-Horizontal-Alignment
    BASIC {ANY real}
    NON-BASIC {NONE}
    DEFAULT {N/A} }

(Continuous-Vertical-Alignment
    BASIC {ANY real}
    NON-BASIC {NONE}
    DEFAULT {N/A} }

}

Character-Set-Index BASIC      {ANY index}
NON-BASIC {NONE}
DEFAULT {1}

Alternate-Character-Set-Index
    BASIC      {ANY index}
    NON-BASIC {NONE}
    DEFAULT   {1}

Text-Aspect-Source-Flags {
    (Text-Font-ASF BASIC {bundled|
                           individual}
     NON-BASIC {NONE}
     DEFAULT   {individual}})

(Text-Precision-ASF
    BASIC {bundled|
            individual}
    NON-BASIC {NONE}
    DEFAULT   {individual}})

(Character-Expansion-Factor-ASF
    BASIC {bundled|
            individual}
    NON-BASIC {NONE}
    DEFAULT   {individual}})

(Character-Spacing-ASF
    BASIC {bundled|
            individual})

```

```

        NON-BASIC {NONE}
        DEFAULT   {individual})
(Text-Colour-ASF BASIC {bundled|
                           individual}
        NON-BASIC {NONE}
        DEFAULT   {individual})
}

```

Text-Bundle-Specifications

```

/* Any bundle consisting of parameters as for individual */
    BASIC      {AS_8613}
    NON-BASIC  {NONE}
    DEFAULT    {N/A}

```

Fill-Area-Rendition

| | |
|-------------------|------------------------|
| Fill-Bundle-Index | BASIC {ANY index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |

| | |
|----------------|---|
| Interior-Style | BASIC {hollow solid pattern hatch empty} |
| | NON-BASIC {NONE} |
| | DEFAULT {hollow} |

Fill-Colour

CASE Colour-Specification-Mode

| | |
|---------|--------------------------------|
| indexed | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |
| direct | BASIC {ANY colour-direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {foreground} |

| | |
|-------------|---|
| Hatch-Index | BASIC {horizontal vertical positive-slope negative-slope vertical-hatch cross-hatch} |
| | NON-BASIC {NONE} |
| | DEFAULT {horizontal} |

| | |
|---------------|------------------------------|
| Pattern-Index | BASIC {1 2 3 4 5 6 7 8} |
| | NON-BASIC {NONE} |
| | DEFAULT {1} |

| | |
|----------------------|------------------------|
| Fill-Reference-Point | BASIC {ANY point} |
| | NON-BASIC {NONE} |

```

        DEFAULT    {{0,0}}
```

```

Pattern-Size      {
  {X-Component-Height-Vector
    BASIC      {ANY vdc}
    NON-BASIC  {NONE}
    DEFAULT    {0}}}
  {Y-Component-Height-Vector
    BASIC      {ANY vdc}
    NON-BASIC  {NONE}
    DEFAULT    {vdcx}}}
  {X-Component-Width-Vector
    BASIC      {ANY vdc}
    NON-BASIC  {NONE}
    DEFAULT    {vdcx}}}
  {Y-Component-Width-Vector
    BASIC      {ANY vdc}
    NON-BASIC  {NONE}
    DEFAULT    {0}}}
}

Pattern-Table-Representation {
  {Pattern-Table-Index
    BASIC      {1|2|3|4|
                  5|6|7|8}
    NON-BASIC  {NONE}
    DEFAULT    {N/A}}}
  {Number-Of-Columns
    BASIC      {1..16}
    NON-BASIC  {NONE}
    DEFAULT    {1}}}
  {Number-Of-Rows
    BASIC      {1..16}
    NON-BASIC  {NONE}
    DEFAULT    {1}}}
  {Local-Colour-Precision .
    BASIC      {0|1|8|16}
    NON-BASIC  {NONE}
    DEFAULT    {0}}}
  {Colour-Array CASE Colour-Specification-Mode
    indexed   BASIC      {1..8*1..16*1..16*
                           ANY colour-index}
    NON-BASIC  {NONE}
    DEFAULT    {1}}
    direct    BASIC      {1..8*1..16*1..16*
                           ANY colour-direct}
    NON-BASIC  {NONE}
    DEFAULT    {foreground}}}
}

Fill-Aspect-Source-Flags {
  {Interior-Style-ASF
```

```

        BASIC      {bundled
                      individual}
        NON-BASIC  {NONE}
        DEFAULT    {individual}}}

{Fill-Colour-ASF
        BASIC      {bundled
                      individual}
        NON-BASIC  {NONE}
        DEFAULT    {individual}}}

{Hatch-Index-ASF
        BASIC      {bundled
                      individual}
        NON-BASIC  {NONE}
        DEFAULT    {individual}}}

{Pattern-Index-ASF
        BASIC      {bundled
                      individual}
        NON-BASIC  {NONE}
        DEFAULT    {individual}}}

}

```

Fill-Bundle-Specifications

```

/* Any bundle consisting of parameters as for individual */
        BASIC      {AS_8613}
        NON-BASIC  {NONE}
        DEFAULT    {N/A}

```

Edge-Rendition

| | |
|-------------------------------|---|
| Edge-Width-Specification-Mode | BASIC {absolute scaled} |
| | NON-BASIC {NONE} |
| | DEFAULT {scaled}} |
| Edge-Bundle-Index | BASIC {ANY index} |
| | NON-BASIC {NONE} |
| | DEFAULT {1}} |
| Edge-Visibility | BASIC {off on} |
| | NON-BASIC {NONE} |
| | DEFAULT {off}} |
| Edge-Type | BASIC {solid dash dot dash-dot dash-dot-dot} |
| | NON-BASIC {NONE} |
| | DEFAULT {solid}} |

Edge-Width

CASE Line-Width-Specification-Mode

| | | |
|----------|-----------|-------------------|
| absolute | BASIC | { POSITIVE vdc} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { 0.001*max-vdcx} |
| scaled | BASIC | { POSITIVE real} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { 1.0} |

Edge-Colour

CASE Colour-Specification-Mode

| | | |
|---------|-----------|----------------------|
| indexed | BASIC | { ANY colour-index} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { 1} |
| direct | BASIC | { ANY colour-direct} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { foreground} |

Edge-Aspect-Source-Flags

| | | |
|-------------------------|-----------|--------------------------|
| (Edge-Type-ASF BASIC) | BASIC | { bundled
individual} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { individual } } |
| (Edge-Width-ASF BASIC) | BASIC | { bundled
individual} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { individual } } |
| (Edge-Colour-ASF BASIC) | BASIC | { bundled
individual} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { individual } } |

}

Edge-Bundle-Specifications

/* Any bundle consisting of parameters as for individual */

| | |
|-----------|------------|
| BASIC | { AS_8613} |
| NON-BASIC | { NONE} |
| DEFAULT | { N/A} |

Colour-Representation

| | | |
|-------------------|-----------|----------------------|
| Background-Colour | BASIC | { ANY colour-direct} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { background} |

Colour-Table-Specification

| | | |
|--------------|-----------|--------------------------------|
| (Start-Index | BASIC | { 1..
Maximum-Colour-Index} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { N/A } } |
| (Colour-List | BASIC | { ANY Colour-List} |
| | NON-BASIC | { NONE} |
| | DEFAULT | { N/A } } |

}

Transparency-Specification

| | |
|-----------------------------|---|
| Transparency | BASIC {off on}
NON-BASIC {NONE}
DEFAULT {on} |
| Auxiliary-Colour
indexed | CASE Colour-Specification-Mode
BASIC {ANY colour-index}
NON-BASIC {NONE}
DEFAULT {0} |
| direct | BASIC {ANY colour-direct}
NON-BASIC {NONE}
DEFAULT {background} |

Transformation-Specification

| | |
|-----------------------|--|
| VDC-Extent
integer | CASE VDC-Type
{ {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}}
{ {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}}
{ {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}}
{ {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}}) |
| real | { {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}}
{ {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}}
{ {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}}
{ {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}} |

}

| | |
|---------------------|---------------------------------|
| Clip-Rectangle | CASE VDC-Type |
| integer | |
| | { {X-Coordinate-First-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0}} |
| | {Y-Coordinate-First-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0}} |
| | {X-Coordinate-Second-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {32767}} |
| | {Y-Coordinate-Second-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {32767}}) |
| real | |
| | { {X-Coordinate-First-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.0}} |
| | {Y-Coordinate-First-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.0}} |
| | {X-Coordinate-Second-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.9999}} |
| | {Y-Coordinate-Second-Point |
| | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {0.9999}}) |
| | } |
| Clip-Indicator | BASIC {off on} |
| | NON-BASIC {NONE} |
| | DEFAULT {on} |
| Region-Of-Interest | BASIC {rectangle
automatic} |
| | NON-BASIC {NONE} |
| | DEFAULT {automatic} |
| Picture-Orientation | BASIC {0 90 180 270} |
| | NON-BASIC {NONE} |
| | DEFAULT {0} |

| | |
|--------------------|---------------------|
| Picture-Dimensions | BASIC {AS 8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {automatic} |

Content Architecture Class Attributes

These attributes identify and describe the content architecture class of a content portion specified within object definitions.

Common-Coding-Attributes

| | |
|----------------|----------------------|
| Type-Of-Coding | BASIC {{2 8 3 8 0 }} |
| | NON-BASIC {NONE} |
| | DEFAULT {NONE} |

Content-Information

The content information of a content portion description that conforms to this content architecture is an ASN.1 octet string representing a Computer Graphics Metafile (OGM) conforming to the following constraints.

- a) Conform to part 1 of the ISO 8632 standard;
- b) Conform to the binary encoding defined in part 3 of the ISO 8632 standard;
- c) Consist of a single picture;
- d) Conform to the OGM implementation agreement specified in section 6.2 of the Technical and Office Protocols Version 3.0 Recommendation, except as noted with respect to font and colour table support;
- e) Generalized Drawing Primitives are ignored;
- f) ESCAPE Elements are ignored;
- g) External Elements may be ignored.

The following list is a description of the permitted values for the OGM elements.

Delimiter-Elements

| | |
|-------|--------------------------|
| No-Op | BASIC {ANY octet-string} |
| | NON-BASIC {NONE} |

| | |
|--|--|
| /* See Note 1 */ | DEFAULT {N/A} |
| Begin-Metafile | BASIC {ANY string}
NON-BASIC {NONE} |
| /* See Note 2 */ | DEFAULT {null-string} |
| End-Metafile | BASIC {N/A}
NON-BASIC {NONE}
DEFAULT {N/A} |
| Begin-Picture | BASIC {ANY string}
NON-BASIC {NONE} |
| /* See Note 2 */ | DEFAULT {null-string} |
| Begin-Picture-Body | BASIC {N/A}
NON-BASIC {NONE}
DEFAULT {N/A} |
| End-Picture | BASIC {N/A}
NON-BASIC {NONE}
DEFAULT {N/A} |
| /* Note 1: An arbitrary sequence of n octets. Where
n=0,1,...,32767. The sequence of zero or more octets is
for padding purposes. | |
| Note 2: Support will be provided for strings with a length upto
256 octets, except for data records which will support
strings with a length up to 32767 octets. | |
| */ | |

Metafile-Description-Elements

| | |
|----------------------|---|
| Metafile-Version | BASIC {1}
NON-BASIC {NONE}
DEFAULT {N/A} |
| Metafile-Description | BASIC {ANY string}
NON-BASIC {NONE} |
| /* See Note 1 */ | DEFAULT {null-string} |
| /* See Note 2 */ | |
| VDC-Type | BASIC {integer real}
NON-BASIC {NONE}
DEFAULT {integer} |
| Integer-Precision | BASIC {16}
NON-BASIC {NONE}
DEFAULT {16} |
| Real-Precision | BASIC {{0,9,23}
{1,16,16}}} |

| | |
|-------------------------------|----------------------------|
| | NON-BASIC {NONE} |
| | DEFAULT {{1,16,16}} |
| Index-Precision | BASIC {16} |
| | NON-BASIC {NONE} |
| | DEFAULT {16} |
| Colour-Precision | BASIC {8 16} |
| | NON-BASIC {NONE} |
| | DEFAULT {8} |
| Colour-Index-Precision | BASIC {8 16} |
| | NON-BASIC {NONE} |
| | DEFAULT {8} |
| Maximum-Colour-Index | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |
| /* See Note 3*/ | DEFAULT {63} |
| Colour-Value-Extent | |
| {MINIMUM-colour-direct | BASIC {ANY colour-direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {{0,0,0}} |
| } | |
| {MAXIMUM-colour-direct | BASIC {ANY colour-direct}. |
| | NON-BASIC {NONE} |
| | DEFAULT {{255,255,255}} |
| } | |
| Metafile-Element-List | |
| {Number-Of-Elements | BASIC {ANY integer} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A} |
| } | |
| {List-Of-Elements | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A} |
| } | |
| Metafile-Defaults-Replacement | |
| | BASIC {AS_8613} |
| | NON-BASIC {NONE} |
| /* See Note 4*/ | DEFAULT {N/A} |
| Font-List | BASIC {NONE} |
| | NON-BASIC {AS_8613} |
| /* See Note 3*/ | DEFAULT {NONE} |
| Character-Set-List { | |
| {Character-Set-Type BASIC | {94-character-G |

```

        -set|
96-character-G
        -set)
NON-BASIC {NONE}
DEFAULT {94-character-G
        -set}}}

/* See Note 5 */          (Designation-Sequence-Tail
        BASIC      {4/1|
                        4/0|
                        4/2}

NON-BASIC {NONE}
/* See Note 5 */          DEFAULT {4/1}}}

Character-Coding-Announcer BASIC {0|1}
        NON-BASIC {NONE}
        DEFAULT {0}

```

/ Note 1:* Support will be provided for strings with a length upto 256 octets, except for data records which will support strings with a length upto 32767 octets.

Note 2: The METAFILE DESCRIPTION string parameter will be used to include the sub-string "NBS/BASIC-1" to label the content as conforming to this agreement.

In addition, generators of content conforming to this content architecture are encouraged to include a sub-string that identifies the company and product that produced the OGM.

Note 3: The basic, non-basic or default for this element is different than that specified in the TOP Version 3.0 Recommendation for OGM.

Note 4: The METAFILE DEFAULTS REPLACEMENT element shall not be partitioned. No part of the element will be partitioned. Multiple occurrences of the METAFILE DEFAULTS REPLACEMENT element may be used to avoid the need for partitioning. The METAFILE DEFAULTS REPLACEMENT element must appear in the content portion conforming to this content architecture to establish the defaults for TEXT PRECISION and any other elements that do not assume the defaults specified in ISO 8632 parts 1 and 3.

Note 5: The character set ISO 646, 7-bit Coded Character Set for Information Interchange, is specified with the parameters (0,4/1). The character set ISO 6937/2, Coded Character Sets for Text Communication - Latin Alphabetic and Non-alphabetic Graphic Characters, is specified with the parameters (0,4/0).

The character set ISO 8859/1, 8-bit Single Byte Coded Graphic Character Sets - Latin Alphabet No. 1, is specified with the parameters (0,4/2).

*/

Picture-Descriptor-Elements

| | |
|--------------------------------|-------------------------|
| Scaling-Mode | { |
| (Scaling-Mode | BASIC {abstract metric} |
| | NON-BASIC {NONE} |
| | DEFAULT {abstract}} |
| (Scale-Factor | CASE Scaling-Mode |
| abstract | BASIC {N/A} |
| | NON-BASIC {N/A} |
| | DEFAULT {N/A} |
| scaled | BASIC {ANY real} |
| | NON-BASIC {NONE} |
| /* See Note 1 */ | DEFAULT {25.4}} |
| | } |
| Colour-Selection-Mode | BASIC {indexed direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {indexed} |
| Line-Width-Specification-Mode | BASIC {absolute scaled} |
| | NON-BASIC {NONE} |
| | DEFAULT {scaled} |
| Marker-Size-Specification-Mode | BASIC {absolute scaled} |
| | NON-BASIC {NONE} |
| | DEFAULT {scaled} |
| Edge-Width-Specification-Mode | BASIC {absolute scaled} |
| | NON-BASIC {NONE} |
| | DEFAULT {scaled} |
| VDC-Extent | CASE VDC-Type |
| integer | |
| ({X-Coordinate-First-Point | |
| BASIC {ANY vdc} | |
| NON-BASIC {NONE} | |
| DEFAULT {0}} | |
| (Y-Coordinate-First-Point | |
| BASIC {ANY vdc} | |
| NON-BASIC {NONE} | |
| DEFAULT {0}} | |
| (X-Coordinate-Second-Point | |
| BASIC {ANY vdc} | |

```

        NON-BASIC {NONE}
        DEFAULT   {32767}}
{Y-Coordinate-Second-Point
    BASIC     {ANY vdc}
    NON-BASIC {NONE}
    DEFAULT   {32767}}}

real
{ (X-Coordinate-First-Point
    BASIC     {ANY vdc}
    NON-BASIC {NONE}
    DEFAULT   {0.0}}
{Y-Coordinate-First-Point
    BASIC     {ANY vdc}
    NON-BASIC {NONE}
    DEFAULT   {0.0}}
{X-Coordinate-Second-Point
    BASIC     {ANY vdc}
    NON-BASIC {NONE}
    DEFAULT   {0.9999}}
{Y-Coordinate-Second-Point
    BASIC     {ANY vdc}
    NON-BASIC {NONE}
    DEFAULT   {0.9999}}
}

```

| | |
|-------------------|-------------------------------|
| Background-Colour | BASIC {ANY colour-direct} |
| | NON-BASIC {NONE} |
| | DEFAULT {background} |

/* Note 1: The Scale-Factor parameter of SCALING MODE element is always a 32-bit floating point value, even when REAL PRECISION has selected fixed-point for other real numbers. It is not apparent in ISO 8632 what the precision of this floating point parameter is when fixed point reals have been selected. Its precision shall be (0,9,23).

/*

Control-Elements

| | |
|-----------------------------|-------------------------------------|
| VDC-Integer-Precision | BASIC {16 32} |
| | NON-BASIC {NONE} |
| | DEFAULT {16} |
| VDC-Real-Precision | BASIC {{0 9 23}
{1 16 16}} |
| | NON-BASIC {NONE} |
| | DEFAULT {{1 16 16}} |
| Auxiliary-Colour
indexed | CASE Colour-Specification-Mode |
| | BASIC {ANY colour-index} |
| | NON-BASIC {NONE} |

| | | | | | | | | | |
|---|---|--|---|---|--|---|--|---|--|
| direct | DEFAULT {0}
BASIC {ANY colour-direct}
NON-BASIC {NONE}
DEFAULT {background} | | | | | | | | |
| Transparency | BASIC {off on}
NON-BASIC {NONE}
DEFAULT {on} | | | | | | | | |
| Clip-Rectangle CASE VDC-Type
integer <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;"> </td> <td>{ {X-Coordinate-First-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0}}}</td> </tr> <tr> <td>{ {Y-Coordinate-First-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0}}}</td> <td> </td> </tr> <tr> <td>{ {X-Coordinate-Second-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {32767}}}</td> <td> </td> </tr> <tr> <td>{ {Y-Coordinate-Second-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {32767}}}</td> <td> </td> </tr> </table> | | | { {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}} | { {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}} | | { {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}} | | { {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}} | |
| | { {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}} | | | | | | | | |
| { {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0}}} | | | | | | | | | |
| { {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}} | | | | | | | | | |
| { {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {32767}}} | | | | | | | | | |
| real <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;"> </td> <td>{ {X-Coordinate-First-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0.0}}}</td> </tr> <tr> <td>{ {Y-Coordinate-First-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0.0}}}</td> <td> </td> </tr> <tr> <td>{ {X-Coordinate-Second-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0.9999}}}</td> <td> </td> </tr> <tr> <td>{ {Y-Coordinate-Second-Point
 BASIC {ANY vdc}
 NON-BASIC {NONE}
 DEFAULT {0.9999}}}</td> <td> </td> </tr> </table> | | | { {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}} | { {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}} | | { {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}} | | { {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}} | |
| | { {X-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}} | | | | | | | | |
| { {Y-Coordinate-First-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.0}}} | | | | | | | | | |
| { {X-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}} | | | | | | | | | |
| { {Y-Coordinate-Second-Point
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {0.9999}}} | | | | | | | | | |
| Clip-Indicator <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;"> </td> <td>BASIC {off on}
NON-BASIC {NONE}
DEFAULT {on}</td> </tr> </table> | | | BASIC {off on}
NON-BASIC {NONE}
DEFAULT {on} | | | | | | |
| | BASIC {off on}
NON-BASIC {NONE}
DEFAULT {on} | | | | | | | | |

Graphical-Primitive-Elements

| | |
|----------|------------------------|
| Polyline | BASIC {ANY point-list} |
|----------|------------------------|

| | |
|-------------------|-------------------------|
| /* See Note 1 */ | NON-BASIC {NONE} |
| | DEFAULT {N/A} |
| Disjoint-Polyline | BASIC {ANY point-list} |
| /* See Note 1 */ | NON-BASIC {NONE} |
| | DEFAULT {N/A} |
| Polymarker | BASIC {ANY point-list} |
| /* See Note 1 */ | NON-BASIC {NONE} |
| | DEFAULT {N/A} |
| Text | { |
| (Text-Position | BASIC {ANY point} |
| | NON-BASIC {NONE} |
| (Final-Flag | DEFAULT {N/A}} |
| | BASIC {final not-final} |
| | NON-BASIC {NONE} |
| (Text-String | DEFAULT {N/A}} |
| | BASIC {ANY string} |
| | NON-BASIC {NONE} |
| /* See Note 2 */ | DEFAULT {N/A}} |
| | } |
| Restricted-Text | { |
| /* See Note 3 */ | |
| (Delta-Width | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A}} |
| (Delta-Height | BASIC {ANY vdc} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A}} |
| (Text-Position | BASIC {ANY point} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A}} |
| (Final-Flag | BASIC {final not-final} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A}} |
| (Text-String | BASIC {ANY string} |
| | NON-BASIC {NONE} |
| /* See Note 2 */ | DEFAULT {N/A}} |
| | } |
| Append-Text | { |
| (Final-Flag | BASIC {final not-final} |
| | NON-BASIC {NONE} |
| | DEFAULT {N/A}} |
| (Text-String | BASIC {ANY string} |
| | NON-BASIC {NONE} |
| /* See Note 2 */ | DEFAULT {N/A}} |
| | } |
| Polygon | BASIC {ANY point-list} |

```

NON-BASIC {NONE}
/* See Note 1 */ DEFAULT {N/A}

Polygon-Set {SEQUENCE-OF
{VERTEX BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A}}
{EDGE-OUT-FLAG BASIC {invisible|
visible|
close-invisible|
close-visible}}
NON-BASIC {NONE}
DEFAULT {N/A}}
}

Cell-Array {
/* See Note 4 */
{Corner-P BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Corner-Q BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Corner-R BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Dimension-X BASIC {ANY integer}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Dimension-Y BASIC {ANY integer}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Local-Colour-Precision
BASIC {0|1|8|16}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Cell-Representation-Mode
BASIC {rle|packed}
NON-BASIC {NONE}
DEFAULT {N/A}}
{Cell-Colour-Values CASE Colour-Representation-Mode
indexed BASIC {ANY colour-list}
NON-BASIC {NONE}
DEFAULT {N/A}
BASIC {ANY colour-list}
NON-BASIC {NONE}
DEFAULT {N/A}}
/* See Note 4 */
direct /* See Note 4 */
/* See Note 4 */
}

Rectangle {
{First-Corner BASIC {ANY point}
NON-BASIC {NONE}

```

```

        DEFAULT {N/A} }
{Second-Corner BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }

}

Circle {
{Centre BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {N/A} }

}

Circular-Arc-3-Point {
{Start-Point BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }

}

Circular-Arc-3-Point-Close {
{Start-Point BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {pie-closure|
chord-closure}
NON-BASIC {NONE}
DEFAULT {N/A} }

}

Circular-Arc-Centre {
{Centre BASIC {ANY point}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY vdc}
NON-BASIC {NONE}
DEFAULT {N/A} }
BASIC {ANY vdc}
NON-BASIC {NONE}

```

```

        DEFAULT {N/A} }
{ End-Delta-X      BASIC {ANY vdc}
                NON-BASIC {NONE}
                DEFAULT {N/A} }
{ End-Delta-Y      BASIC {ANY vdc}
                NON-BASIC {NONE}
                DEFAULT {N/A} }
{ Radius           BASIC {ANY vdc}
                NON-BASIC {NONE}
                DEFAULT {N/A} }
}

Circular-Arc-Centre-Close {
    {Centre          BASIC {ANY point}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {Start-Delta-X   BASIC {ANY vdc}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {Start-Delta-Y   BASIC {ANY vdc}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {End-Delta-X    BASIC {ANY vdc}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {End-Delta-Y    BASIC {ANY vdc}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {Radius          BASIC {ANY vdc}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {Close-Type-Flag BASIC {pie-closure|
                                chord-closure}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
}

Ellipse {
    {Centre          BASIC {ANY point}
                    NON-BASIC {NONE}
                    DEFAULT {N/A} }
    {First-Conjugate-Diameter-End-Point
        BASIC {ANY point}
        NON-BASIC {NONE}
        DEFAULT {N/A} }
    {Second-Conjugate-Diameter-End-Point
        BASIC {ANY point}
        NON-BASIC {NONE}
        DEFAULT {N/A} }
}

Elliptical-Arc {

```

```

{Centre          BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{First-Conjugate-Diameter-End-Point
              BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Second-Conjugate-Diameter-End-Point
              BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Start-Delta-X   BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Start-Delta-Y   BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{End-Delta-X    BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{End-Delta-Y    BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
}

Elliptical-Arc-Close {
{Centre          BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{First-Conjugate-Diameter-End-Point
              BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Second-Conjugate-Diameter-End-Point
              BASIC    {ANY point}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Start-Delta-X   BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Start-Delta-Y   BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{End-Delta-X    BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{End-Delta-Y    BASIC    {ANY vdc}
              NON-BASIC {NONE}
              DEFAULT   {N/A}}
{Close-Type-Flag BASIC    {pie-closure|
                           chord-closure}
              NON-BASIC {NONE}}

```

```

        DEFAULT  {N/A}}
}

/* Note 1: The basic value for lists of points that can appear in
parameters for metafile elements is 1024.

Note 2: The basic value for length of strings in parameters of
metafile elements except data records is 256 octets.
For data records the basic value for the length of
strings is 32767 octets.

Note 3: The complete restricted text string, including appended
text, shall be included in a metafile conforming to
this agreement. The complete restricted text string
shall be scaled isotropically such that the specified
aspect ratio for the text is not distorted and the
string fits into the text extent parallelogram.

Note 4: The basic value for the number of colour values that
can appear in a colour list parameter for the CELL
ARRAY element is 1048576. This supports a 1024 x 1024
image.
*/

```

Attribute-Elements

| | |
|--------------------------|--|
| Line-Bundle-Index | BASIC {ANY index}
NON-BASIC {NONE}
DEFAULT {1} |
|--------------------------|--|

| | |
|------------------|---|
| Line-Type | BASIC {solid
dash
dot
dash-dot
dash-dot-dot}
NON-BASIC {NONE}
DEFAULT {solid} |
|------------------|---|

Line-Width

| | |
|------------------------------------|--|
| CASE Line-Width-Specification-Mode | |
| absolute | BASIC {ANY POSITIVE vdc}
NON-BASIC {NONE}
DEFAULT {0.001*max-vdcx} |
| scaled | BASIC {ANY POSITIVE real}
NON-BASIC {NONE}
DEFAULT {1.0} |

Line-Colour

| | |
|--------------------------------|--|
| CASE Colour-Specification-Mode | |
| indexed | BASIC {ANY colour-index}
NON-BASIC {NONE} |

| | |
|-------------------------------------|--|
| direct | DEFAULT {1}
BASIC {ANY colour-direct}
NON-BASIC {NONE}
DEFAULT {foreground} |
| Marker-Bundle-Index | BASIC {ANY index}
NON-BASIC {NONE}
DEFAULT {1} |
| Marker-Type | BASIC {dot plus asterisk circle cross}
NON-BASIC {NONE}
DEFAULT {asterisk} |
| Marker-Size | |
| CASE Marker-Size-Specification-Mode | |
| absolute | BASIC {ANY POSITIVE vdc}
NON-BASIC {NONE}
DEFAULT {0.01*max-vdcx} |
| scaled | BASIC {ANY POSITIVE real}
NON-BASIC {NONE}
DEFAULT {1.0} |
| Marker-Colour | |
| CASE Colour-Specification-Mode | |
| indexed | BASIC {ANY colour-index}
NON-BASIC {NONE}
DEFAULT {1} |
| direct | BASIC {ANY colour-direct}
NON-BASIC {NONE}
DEFAULT {foreground} |
| Text-Bundle-Index | BASIC {ANY index}
NON-BASIC {NONE}
DEFAULT {1} |
| Text-Font-Index | BASIC {ANY index}
NON-BASIC {NONE}
DEFAULT {1} |
| Text-Precision | BASIC {string character stroke}
NON-BASIC {NONE}
DEFAULT {stroke} |
| Character-Expansion-Factor | |
| | BASIC {ANY POSITIVE real}
NON-BASIC {NONE} |

| | | |
|--------------------------------|---------------|----------------------------------|
| | | DEFAULT {1.0} |
| Character-Spacing | BASIC | {ANY real} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0.0} |
| Text-Colour | | |
| CASE Colour-Specification-Mode | | |
| indexed | BASIC | {ANY colour-index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| direct | BASIC | {ANY colour-direct} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {foreground} |
| Character-Height | | |
| absolute | CASE VDC-Type | |
| | BASIC | {ANY POSITIVE vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0.01*max-vdcx} |
| scaled | BASIC | {POSITIVE vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1.0} |
| Character-Orientation { | | |
| {X-Character-Up-Component | | |
| | BASIC | {ANY vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0}} |
| {Y-Character-Up-Component | | |
| | BASIC | {ANY vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1}} |
| {X-Character-Base-Component | | |
| | BASIC | {ANY vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1}} |
| {Y-Character-Base-Component | | |
| | BASIC | {ANY vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0}} |
| } | | |
| Text-Path | BASIC | {right
left
up
down} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {right} |
| Text-Alignment { | | |
| {Horizontal-Alignment | BASIC | {normal
left
center |

| | | |
|----------------------------------|-----------|---|
| | | right
continuous} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {normal}} |
| {Vertical-Alignment | BASIC | {normal
left
center
right
continuous} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {normal}} |
| {Continuous-Horizontal-Alignment | BASIC | {ANY real} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {N/A}} |
| {Continuous-Vertical-Alignment | basic | {ANY real} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {N/A}}} |
| Character-Set-Index | BASIC | {ANY index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| Alternate-Character-Set-Index | BASIC | {ANY index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| Fill-Bundle-Index | BASIC | {ANY index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| Interior-Style | BASIC | {hollow
solid
pattern
hatch
empty} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {hollow} |
| Fill-Colour | | |
| CASE Colour-Specification-Mode | | |
| indexed | BASIC | {ANY colour-index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| direct | BASIC | {ANY colour-direct} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {foreground} |
| Hatch-Index | BASIC | {horizontal
vertical |

| | | |
|--|-----------|--|
| | | positive-slope
negative-slope
vertical-hatch
cross-hatch} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {horizontal} |

| | | |
|---------------|-----------|--------|
| Pattern-Index | BASIC | {1..8} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |

| | | |
|-------------------|-----------|-------------|
| Edge-Bundle-Index | BASIC | {ANY index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |

| | | |
|-----------|-----------|--|
| Edge-Type | BASIC | {solid
dash
dot
dash-dot
dash-dot-dot} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {solid} |

Edge-Width
CASE Line-Width-Specification-Mode

| | | |
|----------|-----------|------------------|
| absolute | BASIC | {POSITIVE vdc} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {0.001*max-vdcx} |
| scaled | BASIC | {POSITIVE real} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1.0} |

Edge-Colour

| | | |
|--------------------------------|-----------|---------------------|
| CASE Colour-Specification-Mode | | |
| indexed | BASIC | {ANY colour-index} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {1} |
| direct | BASIC | {ANY colour-direct} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {foreground} |

| | | |
|-----------------|-----------|----------|
| Edge-Visibility | BASIC | {off on} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {off} |

| | | |
|----------------------|-----------|-------------|
| Fill-Reference-Point | BASIC | {ANY point} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {(0,0)} |

| | |
|-----------------------|---|
| Pattern-Table | { |
| /* See Note 1 */ | |
| {Pattern-Table-Index} | |

```

        BASIC      {1..8}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}
{Number-Of-Columns BASIC      {1..16}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}
{Number-Of-Rows   BASIC      {1..16}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}
{Local-Colour-Precision BASIC {0|1|8|16}
        NON-BASIC {NONE}
        DEFAULT   {N/A}}
{Colour-Array    CASE Colour-Specification-Mode
    indexed      BASIC      {1..2048*
                            ANY colour-index}
/* See Note 2 */
    direct       BASIC      {1..2048*
                            ANY colour-direct}
/* See Note 2 */
        NON-BASIC {NONE}
        DEFAULT   {N/A}}
}

```

```

Pattern-Size      {
    {X-Component-Height-Vector
        BASIC      {ANY vdc}
        NON-BASIC {NONE}
        DEFAULT   {0}}
    {Y-Component-Height-Vector
        BASIC      {ANY vdc}
        NON-BASIC {NONE}
        DEFAULT   {vdcx}}
    {X-Component-Width-Vector
        BASIC      {ANY vdc}
        NON-BASIC {NONE}
        DEFAULT   {vdcx}}
    {Y-Component-Width-Vector
        BASIC      {ANY vdc}
        NON-BASIC {NONE}
        DEFAULT   {0}}
}

```

```

Colour-Table-Specification {
    /* See Note 3 */
    {Start-Index  BASIC      {1..
                                Maximum-Colour-Index}
        NON-BASIC {NONE}
        DEFAULT   {2}}
    {Colour-List   BASIC      {ANY colour-list}
/* See Note 4 */
        NON-BASIC {NONE}
        DEFAULT   {
}

```

```

    /* Red */      {255, 0, 0},
    /* Green */     {0, 255, 0},
    /* Blue */      {0, 0, 255},
    /* Yellow */     {255, 255, 0},
    /* Magenta */    {255, 0, 255},
    /* Cyan */       {0, 255, 255},
    /* Black */      {0, 0, 0},
    /* White */     {255, 255, 255}}
}

```

| | |
|-----------------------------------|---|
| Aspect-Source-Flags
{ASF-Type} | {SEQUENCE-OF |
| BASIC | {Line-ASF
Line-Width-ASF
Line-Colour-ASF
Marker-Type-ASF
Marker-Size-ASF
Marker-Colour-ASF
Text-Font-Index-
ASF
Text-Precision-
ASF
Character-
Expansion-
Factor-ASF
Character-
Spacing-ASF
Text-Colour-ASF
Interior-Style-
ASF
Fill-Colour-ASF
Hatch-Index-ASF
Pattern-Index-ASF
Edge-Type-ASF
Edge-Width-ASF
Edge-Colour-ASF } |
| NON-BASIC | {NONE} |
| DEFAULT | {Line-ASF,
Line-Width-ASF,
Line-Colour-ASF,
Marker-Type-ASF,
Marker-Size-ASF,
Marker-Colour-ASF,
Text-Font-Index-
ASF,
Text-Precision-
ASF,
Character-
Expansion-
Factor-ASF,
Character-
Spacing-ASF,
Text-Colour-ASF, |

| | | |
|------------|-----------|---------------------------|
| | | Interior-Style- |
| | | ASF, |
| | | Fill-Colour-ASF, |
| | | Hatch-Index-ASF, |
| | | Pattern-Index-ASF, |
| | | Edge-Type-ASF, |
| | | Edge-Width-ASF, |
| | | Edge-Colour-ASF} } |
| (ASF-Value | BASIC | {individual
bundled} |
| | NON-BASIC | {NONE} |
| | DEFAULT | {individual} |

/* Note 1: The PATTERN TABLE element has an unspecified effect when it appears in a picture subsequent to any graphical primitives. The PATTERN TABLE element shall appear prior to any graphical primitive elements to insure that interpreting systems without dynamic pattern update can render the intended effect.

Note 2: The basic value for the number of colour values in a colour array parameter for the PATTERN TABLE element is 2048. This will support 8 patterns of 16 x 16.

Note 3: The COLOUR TABLE element has an unspecified effect when it appears in a picture subsequent to any graphical primitives. The COLOUR TABLE element shall appear prior to any graphical primitive elements to insure that interpreting systems without dynamic colour update can render the intended effect.

Note 4: The basic value for the number of colour values in a colour list parameter for the COLOUR TABLE element is 61. This will support 63 entry colour table.

*/

External-Elements

```

Message {
  {Action-Required-Flag
    BASIC {no-action}
    NON-BASIC {action}
    DEFAULT {N/A}}
  {Message-String
    BASIC {ANY string}
    NON-BASIC {NONE}
    DEFAULT {N/A}}
  /* See Note 1 */
}

Application-Data
  BASIC {ANY data-record}
  NON-BASIC {NONE}
  DEFAULT {N/A}
  /* See Note 1 */

```

```
/* Note 1: The basic value for string parameters in metafile  
elements is 256 octets, except for data records which  
will support strings with a length upto 32767 octets.  
*/
```

2.2.6 DOCUMENT PROFILE

Presence of Document Constituents

PERMITTED

| | |
|----------------------------|-----------|
| Generic-Layout-Structure | {AS_8613} |
| Specific-Layout-Structure | {AS_8613} |
| Generic-Logical-Structure | {AS_8613} |
| Specific-Logical-Structure | {AS_8613} |
| Layout-Styles | {AS_8613} |
| Presentation-Styles | {AS_8613} |
| External-Document-Class | {AS_8613} |
| Resource-Document | {AS_8613} |
| Resources | {AS_8613} |

Document Characteristics

REQUIRED

Document-Application-Profile /* ASN.1 object identifier to be supplied */

Document-Application-Profile-Defaults
(Dimensions {#horizontal{9240}
 #vertical{12400}}
Medium-Type {10200,13200,'unspecified'}
Graphic-Character-Subrepertoire {8}
Raster-Graphics-Type-of-Coding {2 8 3 7 3})

Document-Architecture-Class {AS_8613}
Content-Architecture-Class {AS_8613}
Interchange-Format-Class {A}
ODA-Version /* 1988 */

Non-basic Document Characteristics

PERMITTED

Profile-Character-Sets /* ISO 6937/2 or ISO 8859/1 */
Comments-Character-Sets /* ISO 6937/2 or ISO 8859/1 */
Alternative-Representation-
Character-Sets /* ISO 6937/2 or ISO 8859/1 */
Presentation-Features {AS_8613}

Additional Document Characteristics

PERMITTED

| | |
|--------------|-----------|
| Fonts-List | {AS_8613} |
| Unit-Scaling | {AS_8613} |

Document Management Attributes

REQUIRED

| | |
|--------------------|-----------|
| Document-Reference | {AS_8613} |
|--------------------|-----------|

PERMITTED

| | |
|-------------------------------|-----------|
| Title | {AS_8613} |
| Subject | {AS_8613} |
| Document-Type | {AS_8613} |
| Abstract | {AS_8613} |
| Document-Date-and-Time | {AS_8613} |
| Creation-Date-and-Time | {AS_8613} |
| Local-Filing-Date-and-Time | {AS_8613} |
| Expiry-Date-and-Time | {AS_8613} |
| Start-Date-and-Time | {AS_8613} |
| Purge-Date-and-Time | {AS_8613} |
| Release-Date-and-Time | {AS_8613} |
| Revision-History | {AS_8613} |
| Organizations | {AS_8613} |
| Preparers | {AS_8613} |
| Owners | {AS_8613} |
| Authors | {AS_8613} |
| Copyright | {AS_8613} |
| Status | {AS_8613} |
| User-Specific-Codes | {AS_8613} |
| Distribution-List | {AS_8613} |
| Additional-Information | {AS_8613} |
| References-to-Other-Documents | {AS_8613} |
| Superseded-Documents | {AS_8613} |
| Keywords | {AS_8613} |
| Local-File-Reference | {AS_8613} |
| Document-Size | {AS_8613} |
| Number-of-Pages | {AS_8613} |
| Languages | {AS_8613} |
| Authorization | {AS_8613} |
| Security-Classification | {AS_8613} |
| Access-Rights | {AS_8613} |

2.2.7 DOCUMENT INTERCHANGE FORMAT

The aspects of this Implementation Agreement that are concerned with the Format of the Interchange of documents are defined in this clause. These aspects include the data stream, the interchange data units, and ASN.1 encodings.

Data Stream

The data stream is in accordance with the Office Document Interchange Format Class A, as defined in ISO 8613-5.

The encoding is in accordance with the Basic Encoding Rules for Abstract Syntax Notation One (ASN.1), as defined in ISO 8825.

ASN.1 Generation and Parsing

This clause covers two distinct aspects of ASN.1 generation and parsing. The first aspect covers ASN.1 practices that are mandatory for an implementation to be conforming to this Implementors Agreement. The second aspect covers ASN.1 practices that are recommended by this Implementors Agreement. These recommended practices are not mandatory for conformance, but are recommended solely in the spirit of improving interoperability among different implementations.

ASN.1 Generation Requirements

There are no additional requirements, beyond ISO 8824 and ISO 8825, imposed on the ASN.1 generation.

ASN.1 Parsing Requirements

There are no additional requirements, beyond ISO 8824 and ISO 8825, imposed on the ASN.1 parsing.

ASN.1 Generation Recommendations

The focus of the ASN.1 generation recommendations is to generate ASN.1 encodings that will allow parsing by the most rudimentary of implementations. These recommendations are described in the following sub-clauses.

Segmenting Strings

ISO 8825 allows Bit Strings, Octet Strings, and Character Set Strings to be encoded in the Primitive form or in the Constructed form. The choice of which form to use is an option of the encoder. Using the constructed form allows a string to be segmented into a sequence of strings. This sequence of strings is then contained in the constructed form of the string. The

constructed form is allowed the use of the indefinite form on content length.

This Implementors Agreement recommends that implementations limit the encoding to one level of the constructed form for Bit Strings, Octet Strings, and Character Set Strings.

For example, if of type OCTET STRING, the value '432E436F6D6273' H can be encoded in the primitive form as:

| Octet | String | Length | Contents |
|-------|------------------|------------------|------------------------------|
| | 04 ₁₆ | 07 ₁₆ | 432E436F6D6273 ₁₆ |

The same value may be encoded in the constructed from as:

| Octet | String | Length | Contents |
|------------------|------------------|------------------|--------------------------|
| 24 ₁₆ | 80 ₁₆ | | |
| Octet | String | Length | Contents |
| | 04 ₁₆ | 02 ₁₆ | 432E ₁₆ |
| | 04 ₁₆ | 05 ₁₆ | 436F6D6273 ₁₆ |
| EOC | Length | | |
| | 00 ₁₆ | 00 ₁₆ | |

The same value encoded using two levels of constructed form is not recommended by this Implementors Agreement. An example of an encoding containing two levels of construction is:

| Octet | String | Length | Contents |
|------------------|------------------|------------------|--------------------------|
| 24 ₁₆ | 80 ₁₆ | | |
| Octet | String | Length | Contents |
| 24 ₁₆ | 04 ₁₆ | | |
| Octet | String | Length | Contents |
| | 04 ₁₆ | 02 ₁₆ | 432E ₁₆ |
| | 04 ₁₆ | 05 ₁₆ | 436F6D6273 ₁₆ |
| EOC | Length | | |
| | 00 ₁₆ | 00 ₁₆ | |

Length Expression

ISO 8825 allows the content length of an encoding that could be expressed using the short form to also be expressed using the long form. For example, a length of one could be expressed in the short form as 00000001₂ or in the long form as 10000001₂, 00000001₂. CCITT Recommendation X.409 (1984) does not allow the

same liberty in expressing the length of the encoding length. Implementations using these X.409 rules could present interoperability constraints.

This Implementors Agreement recommends that implementations generate content lengths only in their most economical form.

Ordering of Set Members

ISO 8824 defines sets to be unordered lists of values. It is the generator's option to select an order for the values of the set. Since this ordering is unpredictable from one implementation to the next, it is recommended that generators order the values in a set according to the order in which the members appear in the definition of the set. The intent of this recommendation is to reduce the possible interoperability problems associated with the unpredictable ordering of members in a set.

ASN.1 Parsing Recommendations

The overall intent of these parsing recommendations is to allow a high tolerance in the representation of the ASN.1 syntax without jeopardizing the semantics of the information being conveyed. Each of these tolerances is described in a following sub-clause.

Segmented Strings

The ASN.1 generation restriction on segmenting strings is a recommendation of this Implementors Agreement and is not a requirement of ISO 8825. Therefore, it is recommended that implementations accept string encodings which have been segmented into more than one level of the constructed form.

2.2.8 Relationship to Other DAPS

EWOS

There are three Document Application Profiles (DAPs) being defined by the European Workshop on Open Systems (EWOS) ODA Expert Group. These are called Q/111, Q/112, and Q/113.

Q/113 is expected to be equivalent to the NBS DAP.

CCITT

There are three DAPs defined by CCITT:

- * T.501 - Document Application Profile MM for the Interchange of Formatted Mixed Mode Documents,
- * T.502 - Document Application Profile PM1 for the Interchange of Processable Form Documents, and
- * T.503 - Document Application Profile for the Interchange of Group 4 Facsimile Documents.

It is intended that the NBS DAP will be compatible with the CCITT T.502 DAP.

TOP

The NBS DAP will be presented to the Technical and Office Protocol (TOP) Group as a suggested replacement for the TOP Version 3.0 ODA Application Profile.

The content information of a Geometric Content Architecture content portion description defined according to this NBS DAP conforms to the OGM section of the TOP Version 3.0 Recommendation, without any ESCAPE elements and Grouped Drawing Primitives.

INTAP

The Interoperability Technology Association for Information Processing (INTAP) Experts Group on ODA/ODIF is developing two sets of profiles, AE.111n-J and AE.112n-J of small and medium complexity, respectively. The AE.111n-J set includes the AE.1111-J, AE.1114-J, AE.1115-J, and AE.1116-J profiles. The AE.112n-J set includes the AE.1121-J, AE.1124-J, AE.1125-J, and AE.1126-J profiles. AE.1126-J is expected to be a functional equivalent to the NBS DAP.

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| 12. KEY WORDS (Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)

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